THE

AMERICAN JOURNAL

OF THE MEDICAL SCIENCES

FOR APRIL 1875.

ART. I.—*Statistical Account of the Cases of Amputation performed at the Pennsylvania Hospital from January* 1, 1870, *to January* 1, 1875; *with a General Summary of the Mortality following this Operation in that Institution for forty-five years.* By THOMAS G. MORTON, M.D., one of the Attending Surgeons.

IN the 22d, 26th, and 28th volumes of this Journal statistical tables of all of the capital amputations performed at the Pennsylvania Hospital were published by Dr. George W. Norris. In the Pennsylvania Hospital Reports for 1868, another table by the same author may be found with the statistics completed to 1860. The statistics for ten years, from 1860 to 1870, I published in the October number of this Journal for 1870. The following tables have been drawn up in a similar manner, and represent the statistics for the last five years, with the mortality following this operation during a period of forty-five years. I have also added some tables which are interesting in showing the mortality in the successive months of the years, the ages of the patients, and the mortality following each member amputated. All amputations performed within twenty-four hours after the occurrence of the accident are included in the class of immediate operations. During the ten years from 1860 to 1870 a very marked increase was observed in the number of severe railroad and machinery crushes admitted, as compared with the preceding decade. The same rate of increase during the past five years has been observed; for of the 152 amputations performed during this period (1870 to 1874, inclusive), 118 were immediate operations, and the cases generally were of the most serious character.

No.	Admission	Name.	Age	Disease or injury.	Part amputated.	Immediate or otherwise.	Result.	Period of discharge or death.
	1870							
1	Jan. 1	William Hillyard	44	Ulcer of ankle	Leg	Chronic	Died	March 5, 1870
2	" 7	David G. Beath	28	Compound comminuted fracture of tibia	Knee-joint	Immediate	Cured	Feb. 19, 1870
3	Feb. 9	Daniel Nawn	29	Crushed hand	Hand	"	"	March 2, 1870
4	March 4	Patrick Cullen	55	Compound comminuted fracture of ankle	Leg	"	Died	March 5, 1870
5	" 5	James Eyere	36	" " " of humerus	Arm	Secondary	Cured	July 4, 1870
6	" 17	John Davis	33	Necrosis of carpus following sprain	Forearm	Chronic	"	April 18, 1870
7	" 26	George Graham	13	Compound comminuted fracture of leg	Leg	Immediate	"	June 2, 1870
8	May 16	Robert Donnelly	11	Lacerated wound of the foot	Leg	"	"	July 1, 1870
9	" 25	George Benfield	30	Compound comminuted fracture of foot	Foot (Pirogoff)	"	"	Sept. 7, 1870
10	" 29	John Gegnar	19	" " " of leg	Leg	"	Died	June 8, 1870
11	June 1	David Gillan	27	Compound fracture of tarsus	Leg	"	Cured	July 13, 1870
12	" 21	William Prescott	37	Compound comminuted fracture of leg	Leg	"	Died	June 24, 1870
13	" 22	Patrick Harrington	5	" " " of hand	Hand	"	Cured	July 19, 1870
14	July 6	Alex. McConaghy	50	Strumous disease of ankle-joint	Leg	Chronic	"	Oct. 31, 1870
15	Aug. 12	Patrick Casey	14	Compound comminuted fracture of humerus and scapula	Shoulder-joint	Immediate	"	Oct. 2, 1870
16	" 13	Ernst Karg	21	Compound comminuted fracture of leg	Knee-joint	"	Died	Aug. 23, 1870
17	" 19	John Wilson	40	" " " of tarsus	Foot (Pirogoff)	"	Cured	Nov. 5, 1870
18	Sept. 16	Michael Earley	27	" " " of forearm	Forearm	Secondary	Died	Oct. 9, 1870
19	" 22	Henry Williams	7	" " " of leg	Knee-joint	Immediate	Cured	Dec. 9, 1870
20	" 27	Thomas Boyce	13	Lacerated hand and forearm	Forearm	"	"	Oct. 21, 1870
21	Oct. 1	Thomas Little	20	Compound comminuted fracture of foot	Leg	"	Died	Oct. 14, 1870
22	" 5	James Duval	40	Crushed hand	Forearm	"	Cured	Oct. 26, 1870
23	" 27	William McMullen	25	Lacerated arm, coal-mine explosion	Forearm	"	Died	Nov. 15, 1870
24	Nov. 2	William Kershaw	43	Compound comminuted fracture of arm	Arm	"	Cured	Nov. 25, 1870
25	" 19	Catharine Smith	40	" " " of foot	Leg	"	"	March 11, 1871
26	Dec. 12	William Delaney	16	" " " of forearm	Forearm	"	"	March 29, 1871
27	Oct. 13	Daniel S. Brown	24	Lacerated hand and leg	Hand	"	"	Oct. 25, 1870
28	Dec. 12	William Henson	24	Compound comminuted fracture of leg	Leg	"	"	Feb. 17, 1871
29	" 13	John Gerstwille	29	" " " of arm	Arm	"	"	Jan. 13, 1871
30	" 20	John Carey	17	Irritable stump	Foot (Pirogoff)	Chronic	"	April 28, 1871
	1871							
31	Jan. 12	William Mitchell	16	Irritable stump	Leg	"	Cured	Feb. 20, 1871
32	" 13	Robert Cascaden	36	Railroad crush of leg	Leg	Immediate	Died	Jan. 31, 1871
33	Feb. 25	Peter Ryan	26	Compound fracture of humerus	Shoulder-joint	"	Cured	May 8, 1871

No.	Admission.	Name.	Age	Disease or injury.	Part amputated.	Immediate or otherwise.	Result.	Period of discharge or death.
	1871							
34	March 24	Thos. Webster (col.)	16	Strumous disease of elbow after resection	Arm	Chronic	Cured	Nov. 23, 1871
35	" 12	William Bradley	44	Compound fracture of tarsus	Leg	Immediate	"	May 17, 1871
36	May 13	Louis Oswald	15	Crushed forearm	Arm	"	"	June 10, 1871
37	" 14	Geo. Cunningham	35	Compound fracture of foot	Foot (Chopart)	"	"	July 3, 1871
38	" 15	Mary Dorsey	7	Laceration of leg	Thigh	"	Died	June 2, 1871
39	" 16	James Conahue	30	Necrosis of carpus	Forearm	Chronic	Cured	June 28, 1871
40	" 28	Frank D. White	18	Railroad crush of leg	Knee-joint	Immediate	"	Sept. 20, 1871
41	June 13	John Forsyth	32	Compound comminuted fracture of arm	Arm	"	"	July 22, 1871
42	" 20	Thomas McTag	15	Laceration of foot	Foot (Pirogoff)	"	"	Jan. 27, 1872
43	" 22	Fanny McCauley	3	Compound fracture of leg	Knee-joint	"	Died	June 30, 1871
44	" 23	Frederick Miller	11	Crushed leg by railroad	Leg	"	Cured	Sept. 13, 1871
45	" 23	" "	11	Irritable stump and necrosis	Leg	Chronic	"	Sept. 13, 1871
46	" 23	Thomas Carroll	24	Compound comminuted fracture of leg	Leg	Immediate	"	Sept. 2, 1871
47	" 26	Nicholas Dowdell	15	Machinery crush of forearm	Forearm	"	Died	July 6, 1871
48	July 8	Jacques Montgenie	18	Railroad crush of leg	Knee-joint	"	Cured	Sept. 7, 1871
49	Aug. 20	Ann Kelly	40	Crushed foot	Leg	"	Died	Aug. 28, 1871
50	" 15	Joseph L. Clark	42	Necrosis of tibia	Leg	Chronic	"	Dec. 1, 1871
51	Sept. 2	William Nelson	28	Gunshot wound of hand	Forearm	Immediate	Cured	Sept. 16, 1871
52	" 13	James Dowdell	13	Railroad crush of ankle	Leg	"	"	Jan. 1, 1872
53	" 13	William N. Perkins	42	Compound fracture of ankle-joint	Leg	"	"	June 17, 1872
54	" 18	Patrick Hogan	50	Compound comminuted fracture of leg	Knee-joint	"	Died	Sept. 19, 1871
55	" "	" "	"	" " " " "	Leg	"	"	" "
56	" 20	Albert Hopkinson	15	Forearm torn off at elbow-joint	Arm	"	Cured	Oct. 28, 1871
57	" 30	Frank D. White	18	Irritable stump	Thigh	Chronic	"	Dec. 15, 1871
58	Oct. 11	John Rohan	50	Compound comminuted fracture of leg	Leg	Immediate	Removed by fr'nds	Oct. 23, 1871
59	Nov. 5	John Gorman	18	Lacerated hand involving wrist-joint	Forearm	"	Cured	Dec. 11, 1871
60	" 6	John Mears	23	Irritable stump	Foot (Chopart)	Chronic	"	Feb. 2, 1872
61	" 23	John Spring	41	Cancer of leg	Knee-joint	"	"	Jan. 30, 1872
62	" 9	George Morley	45	Crushed foot by railroad	Foot (Pirogoff)	Immediate	"	March 16, 1872
63	Dec. 1	John Keogh	34	Compound comminuted fracture of leg	Knee-joint	"	"	June 17, 1872
64	" 8	James Moore	35	Crushed foot by railroad	Foot (Chopart)	"	Died	Dec. 29, 1871
65	" 8	George G. Patterson	24	Crushed hand	Forearm	"	Cured	Jan. 19, 1872
66	" 15	Martin Bryan	11	Disease of knee-joint	Thigh	Chronic	"	June 11, 1872
67	" 20	John C. Russell	26	Compound comminuted fracture of leg	Leg	Immediate	Died	Dec. 25, 1871

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No.	Admission.	Name.	Age	Disease or injury.	Part amputated.	Immediate or otherwise.	Result.	Period of discharge or death.
	1870							
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2	" 7	David G. Beath	28	Compound comminuted fracture of tibia	Knee-joint	Immediate	Cured	Feb. 19, 1870
3	Feb. 9	Daniel Nawn	29	Crushed hand	Hand	"	"	March 2, 1870
4	March 4	Patrick Cullen	55	Compound comminuted fracture of ankle	Leg	"	Died	March 5, 1870
5	" 5	James Eyere	36	" " " of humerus	Arm	Secondary	Cured	July 4, 1870
6	" 17	John Davis	33	Necrosis of carpus following sprain	Forearm	Chronic	"	April 18, 1870
7	" 26	George Graham	13	Compound comminuted fracture of leg	Leg	Immediate	"	June 2, 1870
8	May 16	Robert Donnelly	11	Lacerated wound of the foot	Leg	"	"	July 1, 1870
9	" 25	George Benfield	30	Compound comminuted fracture of foot	Foot (Pirogoff)	"	"	Sept. 7, 1870
10	" 29	John Gegnar	19	" " " of leg	Leg	"	Died	June 8, 1870
11	June 1	David Gillan	27	Compound fracture of tarsus	Leg	"	Cured	July 13, 1870
12	" 21	William Prescott	37	Compound comminuted fracture of leg	Leg	"	Died	June 24, 1870
13	" 22	Patrick Harrington	5	" " " of hand	Hand	"	Cured	July 19, 1870
14	July 6	Alex. McConaghy	50	Strumous disease of ankle-joint	Leg	Chronic	"	Oct. 31, 1870
15	Aug. 12	Patrick Casey	14	Compound comminuted fracture of humerus and scapula	Shoulder-joint	Immediate	"	Oct. 2, 1870
16	" 13	Ernst Karg	21	Compound comminuted fracture of leg	Knee-joint	"	Died	Aug. 23, 1870
17	" 19	John Wilson	40	" " " of tarsus	Foot (Pirogoff)	"	Cured	Nov. 5, 1870
18	Sept. 16	Michael Earley	27	" " " of forearm	Forearm	Secondary	Died	Oct. 9, 1870
19	" 22	Henry Williams	7	" " " of leg	Knee-joint	Immediate	Cured	Dec. 9, 1870
20	" 27	Thomas Boyce	13	Lacerated hand and forearm	Forearm	"	"	Oct. 21, 1870
21	Oct. 1	Thomas Little	20	Compound comminuted fracture of foot	Leg	"	Died	Oct. 14, 1870
22	" 5	James Duval	40	Crushed hand	Forearm	"	Cured	Oct. 26, 1870
23	" 27	William McMullen	25	Lacerated arm, coal-mine explosion	Forearm	"	Died	Nov. 15, 1870
24	Nov. 2	William Kershaw	43	Compound comminuted fracture of arm	Arm	"	Cured	Nov. 25, 1870
25	" 19	Catharine Smith	40	" " " of foot	Leg	"	"	March 11, 1871
26	Dec. 12	William Delaney	16	" " " of forearm	Forearm	"	"	March 29, 1871
27	Oct. 13	Daniel S. Brown	24	Lacerated hand and leg	Hand	"	"	Oct. 25, 1870
28	Dec. 12	William Henson	24	Compound comminuted fracture of leg	Leg	"	"	Feb. 17, 1871
29	" 13	John Gerstwille	29	" " " of arm	Arm	"	"	Jan. 13, 1871
30	" 30	John Carey	17	Irritable stump	Foot (Pirogoff)	Chronic	"	April 28, 1871
	1871							
31	Jan. 12	William Mitchell	16	Irritable stump	Leg	"	Cured	Feb. 20, 1871
32	" 13	Robert Cascaden	36	Railroad crush of leg	Leg	Immediate	Died	Jan. 31, 1871
33	Feb. 25	Peter Ryan	26	Compound fracture of humerus	Shoulder-joint	"	Cured	May 8, 1871

No.	Admission.	Name.	Age	Disease or injury.	Part amputated.	Immediate or otherwise.	Result.	Period of discharge or death.
	1871							
34	March 24	Thos. Webster (col.)	16	Strumous disease of elbow after resection	Arm	Chronic	Cured	Nov. 23, 1871
35	" 12	William Bradley	44	Compound fracture of tarsus	Leg	Immediate	"	May 17, 1871
36	May 13	Louis Oswald	15	Crushed forearm	Arm	"	"	June 10, 1871
37	" 14	Geo. Cunningham	35	Compound fracture of foot	Foot (Chopart)	"	"	July 3, 1871
38	" 15	Mary Dorsey	7	Laceration of leg	Thigh	"	Died	June 2, 1871
39	" 16	James Conahue	30	Necrosis of carpus	Forearm	Chronic	Cured	June 28, 1871
40	" 28	Frank D. White	18	Railroad crush of leg	Knee-joint	Immediate	"	Sept. 20, 1871
41	June 13	John Forsyth	32	Compound comminuted fracture of arm	Arm	"	"	July 22, 1871
42	" 20	Thomas McTag	15	Laceration of foot	Foot (Pirogoff)	"	"	Jan. 27, 1872
43	" 22	Fanny McCauley	3	Compound fracture of leg	Knee-joint	"	Died	June 30, 1871
44	" 23	Frederick Miller	11	Crushed leg by railroad	Leg	"	Cured	Sept. 13, 1871
45	" 23	" "	11	Irritable stump and necrosis	Leg	Chronic	"	Sept. 13, 1871
46	" 23	Thomas Carroll	24	Compound comminuted fracture of leg	Leg	Immediate	"	Sept. 2, 1871
47	" 26	Nicholas Dowdell	15	Machinery crush of forearm	Forearm	"	Died	July 6, 1871
48	July 8	Jacques Montgenie	18	Railroad crush of leg	Knee-joint	"	Cured	Sept. 7, 1871
49	Aug. 20	Ann Kelly	40	Crushed foot	Leg	"	Died	Aug. 28, 1871
50	" 15	Joseph L. Clark	42	Necrosis of tibia	Leg	Chronic	"	Dec. 1, 1871
51	Sept. 2	William Nelson	28	Gunshot wound of hand	Forearm	Immediate	Cured	Sept. 16, 1871
52	" 13	James Dowdell	13	Railroad crush of ankle	Leg	"	"	Jan. 1, 1872
53	" 13	William N. Perkins	42	Compound fracture of ankle-joint	Leg	"	"	June 17, 1872
54	" 18	Patrick Hogan	50	Compound comminuted fracture of leg	Knee-joint	"	Died	Sept. 19, 1871
55	" "	" "	"	" " " " "	Leg	"	"	" "
56	" 20	Albert Hopkinson	15	Forearm torn off at elbow-joint	Arm	"	Cured	Oct. 28, 1871
57	" 30	Frank D. White	18	Irritable stump	Thigh	Chronic	"	Dec. 15, 1871
58	Oct. 11	John Rohan	50	Compound comminuted fracture of leg	Leg	Immediate	Remov'd by fr'nds	Oct. 23, 1871
59	Nov. 5	John Gorman	18	Lacerated hand involving wrist-joint	Forearm	"	Cured	Dec. 11, 1871
60	" 6	John Mears	23	Irritable stump	Foot (Chopart)	Chronic	"	Feb. 2, 1872
61	" 23	John Spring	41	Cancer of leg	Knee-joint	"	"	Jan. 30, 1872
62	" 9	George Morley	45	Crushed foot by railroad	Foot (Pirogoff)	Immediate	"	March 16, 1872
63	Dec. 1	John Keogh	34	Compound comminuted fracture of leg	Knee-joint	"	"	June 17, 1872
64	" 8	James Moore	35	Crushed foot by railroad	Foot (Chopart)	"	Died	Dec. 29, 1871
65	" 8	George G. Patterson	24	Crushed hand	Forearm	"	Cured	Jan. 19, 1872
66	" 15	Martin Bryan	11	Disease of knee-joint	Thigh	Chronic	"	June 11, 1872
67	" 20	John C. Russell	26	Compound comminuted fracture of leg	Leg	Immediate	Died	Dec. 25, 1871

No.	Admission.	Name.	Age	Disease or injury.	Part amputated.	Immediate or otherwise.	Result.	Period of discharge or death.
	1872							
68	Jan. 23	John Noble	23	Compound comm. fracture of ankle-joint	Leg	Immediate	Died	Feb. 15, 1872
69	Feb. 1	Benjamin Tally	67	Compound fracture of forearm	Arm	"	Cured	Feb. 6, 1872
70	" 16	Michael Dougherty	42	Lacerated wound of hand	Arm	"	"	April 26, 1872
71	" 22	William Nicholson	16	Injury of limb (amputated)	Leg	"	"	April 18, 1872
72	April 30	John Macomber	19	Necrosis of femur	Hip-joint	Chronic	Died	May 14, 1872
73	March 15	Joseph P. Hill	34	Compound fracture of forearm	Forearm	Immediate	Cured	April 25, 1872
74	May 14	" "	34	Necrosis of stump	Forearm	Chronic	"	June 17, 1872
75	June 12	William Gibson	21	Compound comminuted fracture of hand	Wrist-joint	Immediate	"	July 17, 1872
76	" 23	John S. Watson	30	Compound comminuted fracture of left leg	Knee-joint	"	"	Nov. 11, 1872
77	" 24	William Burns	20	" " " of foot	Foot (Pirogoff)	"	"	Aug. 24, 1872
78	July 4	William Ford	19	" " " "	Foot (Pirogoff)	"	"	Aug. 22, 1872
79	" 11	Willett P. Cummings	22	" " " "	Foot	"	Died	July 30, 1872
80	" 13	Matthew Collins	30	Laceration of hand	Wrist	"	Cured	Aug. 13, 1872
81	" 29	George Kaines	25	Ankylosis of knee-joint	Thigh	Chronic	"	Dec. 21, 1872
82	Aug. 13	Edward Conner	20	Compound comminuted fracture of hand	Forearm	Immediate	"	Sept. 17, 1872
83	" 13	John Dunworth	46	" " " of leg	Leg	"	"	Oct. 17, 1872
84	" 14	William Connell	35	" " " "	Knee-joint	"	"	Oct. 14, 1872
85	" 15	James Robinson	75	Crushed shoulder	Arm	"	Remov'd by fr'nds	Aug. 22, 1872
86	" 20	John Hose	13	Compound comm. fracture of forearm	Forearm	"	Cured	Sept. 6, 1872
87	Sept. 16	Andrew Schnapps	32	Complicated laceration of arm	Arm	"	"	Oct. 21, 1872
88	Oct. 5	James Flood	20	Compound comm. fract. of foot and thigh	Thigh	"	Died	Oct 7, 1872
89	" 5	Isabella McGinnis	50	Carcinoma of leg	Leg	Chronic	"	Nov. 7, 1872
90	" 19	Thomas D. Sturgis	15	Compound comminuted fracture of foot	Foot (Pirogoff)	Immediate	Cured	Dec. 30, 1872
91	" 26	William E. Jackson	22	Irritable stump	Leg	Chronic	"	Dec. 21, 1872
92	Nov. 12	James Loughead	54	Necrosis of tibia	Leg	"	Died	Dec. 28, 1872
93	" 27	William Keever	50	Necrosis of wrist-joint	Forearm	"	Cured	Feb. 21, 1873
94	Dec. 28	Christian Goodyear	26	Compound fracture of forearm	Arm	Immediate	Died	Feb. 20, 1873
	1873							
95	Jan. 14	Margaret Bradley	13	Carcinoma of leg	Thigh	Chronic	Cured	March 31, 1873
96	" 21	Jacob Zikel	22	Laceration of arm	Shoulder-joint	Immediate	Died	Jan. 30, 1873
97	Feb. 5	Jacob E. Trautman	24	Compound comminuted fracture of femur	Thigh	"	"	Feb. 24, 1873
98	" 12	Thomas Walter	19	Necrosis of femur	Thigh	Chronic	"	Feb. 27, 1873
99	March 3	Ellen Cairns	21	Necrosis of tibia	Knee-joint	Chronic	Cured	Aug. 6, 1873
100	" 3	Thomas Ledson	55	Compound comminuted fracture of foot	Leg	Immediate	"	March 31, 1873

No.	Admission.	Name.	Age	Disease or injury.	Part amputated.	Immediate or otherwise.	Result.	Period of discharge or death.
	1873							
101	March 12	Henry Todd	26	Synovitis of knee	Thigh	Chronic	Cured	April 26, 1873
102	" 19	James Hopper	15	Compound comminuted fracture of leg	Thigh	Immediate	Died	April 5, 1873
103	" 28	James McLaughlin	54	" " " of tibia	Leg	"	Cured	May 26, 1873
104	April 6	John Kelley	20	" " " of forearm	Arm	"	"	June 3, 1873
105	" 11	James Butler	22	Compound fracture of hand and forearm	Wrist-joint	Secondary	"	Aug. 1, 1873
106	May 9	Frank Dentinger	16	Compound comminuted fracture of leg	Thigh	Immediate	Died	May 28, 1873
107	June 1	Thos. W. Humphreys	39	Crushed foot by railroad	Ankle	Secondary	Cured	Aug. 7, 1873
108	" 5	Henry O'Neil	25	Crush of foot and leg	Leg	Immediate	"	Aug. 22, 1873
109	" 11	James Johnson	19	Strumous disease of tarsus	Leg	Chronic	"	Dec. 20, 1873
110	July 8	Frank Marks	10	Compound comminuted fracture of leg	Leg	Immediate	"	Aug. 11, 1873
111	" 11	Frank Swing	19	" " " "	Leg	"	Died	July 29, 1873
112	" 24	William Veit	17	Lacerated wound of hand	Forearm	"	Cured	Aug. 11, 1873
113	" 31	William Procter	30	Compound comm. fracture of forearm	Forearm	"	"	Aug. 23, 1873
114	Aug. 14	Lizzie Sullivan	33	Necrosis of ankle	Leg	Chronic	"	Jan. 9, 1874
115	" 19	Charles Colby	13	Lacerated hand	Hand	Immediate	"	Sept. 27, 1873
116	" 31	Bentley Gaul	34	Gunshot wound of the hand	Hand	"	"	Sept. 6, 1873
117	Sept. 2	Elmer Ulrich	23	Railroad crush of leg	Thigh	"	"	Sept. 29, 1873
118	" 5	John Peters	30	Crushed foot	Ankle (Pirogoff)	"	"	Oct. 15, 1873
119	" 25	John Smith	25	Railroad crush of arm	Arm	"	Died	Oct. 10, 1873
120	" 27	William Fritz[1]	40	Crushed tarsus (stone)	Foot (Chopart)	"	Cured	Dec. 7, 1874
121	" 28	Joseph L. Orr	38	Machinery crush	Foot (Chopart)	"	"	Nov. 10, 1873
122	Oct. 4	Richard Warner	25	Crushed by a fall of coal	Leg	"	"	Jan. 10, 1874
123	" 18	John Gee	15	Machinery crush of elbow	Arm	"	"	Nov. 27, 1873
124	Nov. 20	Henry T. Sier	40	Railroad crush of arm	Arm	"	"	Jan. 1, 1874
125	" 20	Eugene G. Golder	23	Compound comminuted fracture of tibia	Knee-joint	"	"	Jan. 24, 1874
	1874							
126	Jan. 20	Thomas Jay (col'd)	19	Compound comminuted fracture of foot	Leg	"	Died	Feb. 8, 1874
127	" 11	James Carter	18	Railroad crush of hand	Forearm	"	"	Jan. 17, 1874
128	" 29	James Devlin	14	Compound fracture of leg	Leg	"	"	Feb. 20, 1874
129	Feb. 16	Paul McCluskey	10	" " of ankle	Leg	"	"	Feb. 25, 1874
130	" 28	Michael Hammill	12	Compound dislocation of ankle	Leg	"	"	March 18, 1874
131	March 6	Augustus Caswell	32	Compound comminuted fracture of arm	Arm	"	"	March 25, 1874
132	" 28	Richard E. Kendrick	11	Railroad crush of arm	Arm	"	Cured	June 10, 1874

[1] Severe neuralgia of stump followed; the posterior tibial and external popliteal nerves were excised, with entire relief.

No.	Admission.	Name.	Age	Disease or injury.	Part amputated.	Immediate or otherwise.	Result.	Period of discharge or death.
	1874							
133	May 8	William Wilkinson	14	Cog-wheel crush of hand	Hand	Immediate	Cured	June 13, 1874
134	" 22	Wm. B. Flounders	28	Gunshot wound of wrist	Forearm	"	"	June 20, 1874
135	June 26	Fred. Blatchford	19	Machinery crush with hot rollers	Arm	Secondary	Died	July 11, 1874
136	July 1	David L. Bates	13	Crushed foot	Leg	Immediate	"	July 20, 1874
137	" 2	William White	30	Lacerated hand	Hand	"	Cured	Aug. 21, 1874
138	" 4	Moses Kinkade	15	Gunshot wound of hand	Hand	"	"	Aug. 12, 1874
139	" 10	William Maloney	4	Crushed leg by railroad	Leg	"	"	Aug. 24, 1874
140	" 23	James Williams	14	Compound comminuted fracture of foot	Leg	"	"	Oct. 19, 1874
141	" 25	William Kelley	23	Compound crushed foot	Leg	"	"	Jan. 15, 1875
142	" 25	" "	23	Necrosis	Thigh	Chronic	"	Jan. 15, 1875
143	" 27	Catharine Dougherty	11	Crush of hand	Hand	Immediate	"	Aug. 28, 1874
144	Aug. 3	Charles Currie	15	Compound comminuted fracture of foot	Leg	"	"	Oct. 19, 1874
145	" 19	Joseph Anderson	22	" " " " of thigh	Thigh	"	Died	Aug. 21, 1874
146	" 24	Patrick M. Mullin[1]	21	Compound fracture of leg	Thigh	Secondary	Cured	.....
147	Sept. 1	Doctrine Newberry[2]	40	Necrosis of femur	Thigh	Chronic	"	.....
148	" 18	Peter Little[3]	42	" of ankle	Leg	"	"	.....
149	" 4	William H. Geary	29	Machinery crush of hand	Forearm	Immediate	"	Oct. 7, 1874
150	Oct. 4	Andrew Nesby	10	Railroad crush of foot	Foot	"	"	Nov. 6, 1874
151	Nov. 23	James Barrett	40	Crush of knee, thigh, and leg	Thigh	"	Died	Nov. 24, 1874
152	Dec. 1	Charles B. Mason	24	Laceration of hand	Hand	"	Cured	Jan. 5, 1875

[1] Remains with bed-sore. [2] Remains with some necrosis. [3] Remains with small ulcer stump.

Of the 152 amputations on 151 patients performed during the five years from 1870–1874 inclusive, 41 died, or 27 per cent.

116 were primary (1 double amputation). Of this number 81 were cured; 34 died, or 29 per cent.

5 were secondary. Of this number 3 were cured; 2 died, or 40 per cent.

29 were for chronic diseases. Of this number 23 were cured; 6 died, or 26 per cent.

Two amputations, one of the arm and one of the leg, both immediate, were removed by friends.

Table showing the various operations, with the results.

1	hip-joint amputation.	Chronic.	Died.
1	thigh "	Immediate.	Cured.
7	" "	"	Died.
1	" "	Secondary.	Cured.
7	" "	Chronic.	"
1	" "	"	Died.
8	knee "	Immediate.	Cured.
3	" "	"	Died.
2	" "	Chronic.	Cured.
21	leg "	Immediate.	"
14	" "	"	Died.
7	" "	Chronic.	Cured.
4	" "	"	Died.
12	foot "	Immediate.	Cured.
2	" "	"	Died.
2	" "	Chronic.	Cured.
1	" "	Secondary.	"
2	shoulder-joint	Immediate.	"
1	"	"	Died.
12	arm amputations.	"	Cured.
3	" "	"	Died.
1	" "	Secondary.	Cured.
1	" "	"	Died.
1	" "	Chronic.	Cured.
13	forearm "	Immediate	"
3	" "	"	Died.
1	" "	Secondary.	"
4	" "	Chronic.	Cured.
12	wrist and hand	Immediate.	"
1	" "	Secondary.	"

56 of the amputations were of the upper extremity; of this number 9 died, or 16 per cent.

96 of the amputations were of the lower extremity; of this number 32 died, or 34 per cent.

Adding these results to the statistics already published, we have the total—

902 amputations in 896 patients. Of this number, 663 were cured; 230 died, or 25 per cent.; 3 were removed by friends.

618 of the amputations were primary. Of these, 460 were cured; 155 died, or 25 per cent.

95 were secondary. Of these, 55 were cured; 40 died, or 42 per cent.

183 were chronic. Of these, 148 were cured; 35 died, or 19 per cent.

Of the 230 deaths, 59 occurred within five days after the amputation; 32 occurred between five and ten days; 139 occurred after ten days.

Of the total number of deaths after amputations during forty-five years, we find that the mortality of the different months of these years was as follows: in

January,	11 died.	July,	29 died
February,	15 "	August,	22 "
March,	15 "	September,	19 "
April,	16 "	October,	21 "
May,	27 "	November,	11 "
June,	25 "	December,	19 "

It will be observed that the smallest number of deaths occurred in January and November, when the hospital wards have pure but heated air by forced ventilation, while in the months of May, June, July, and August, when the ventilation in the hospital is effected by simply opening windows, we find the largest number of deaths. Mr. Edward Richardson has examined the Hospital records, and has found that during a period of twenty-five years, from 1850 to 1874, inclusive, in 2015 deaths in the surgical wards, the months of February and November also exhibit the smallest number; from May to September the mortality was very much greater; while in July and August the deaths were double the number of those in February. These results may be induced by various agencies, but they naturally suggest the subject of ventilation in the summer in hospital wards, and whether proper change in the air of a ward can be brought about without open fireplaces or currents of air forced from a fan. It is well known that opening all the windows of a ward in certain states of the atmosphere will not change the air at all, and there is little doubt that either of the above-mentioned plans to secure ventilation might be adopted with much better results.

Analyzing the 902 amputations, we find the mortality and general results as follows:—

6 hip-joint amputations; 2 chronic, cured; 3 chronic, died; 1 immediate, died.

121 thigh amputations; 49 of these were immediate; 24 cured; 25 died, or 51 per cent. 18 were secondary; 11 cured; 7 died, or 39 per cent. 54 were for the cure of chronic diseases; 41 cured; 13 died, or 24 per cent.

33 knee-joint amputations; 24 were immediate; 16 cured; 8 died, or 33 per cent. 1 secondary cured, 1 died; 6 chronic cured, 1 died, or 17 per cent.

293 leg amputations; 190 were immediate; 118 cured; 72 died, or 38 per cent. 34 were secondary; 15 cured; 19 died, or 56 per cent. 67 were chronic; 53 cured; 14 died, or 21 per cent. 2 immediate, removed by friends.

65 foot amputations; 47 were immediate; 37 cured; 10 died, or 21 per cent. 5 were secondary; 4 cured; 1 died, or 20 per cent. 13 chronic; 12 cured; 1 died, or 8 per cent.

25 shoulder-joint amputations; 19 were immediate; 12 cured; 7 died, or 37 per cent. 1 secondary cured; 5 chronic cured.

138 arm amputations; 107 were immediate; 87 cured; 20 died, or 19 per cent.; 1 removed by friends. 19 were secondary; 12 cured; 7 died, or 37 per cent. 11 were chronic; 9 cured; 2 died, or 18 per cent.

160 forearm amputations; 127 were immediate; 115 cured; 12 died, or 9 per cent. 15 were secondary; 10 cured; 5 died, or 33 per cent. 18 were chronic; 17 cured; 1 died, or 6 per cent.

3 elbow-joint amputations; 3 immediate, cured.

52 wrist and hand amputations; 48 immediate, cured; 1 secondary, cured; 3 chronic, cured.

Of 881 patients whose ages have been recorded—

288 were under 20 years; of this number, 246 were cured; 42 died, or 15 per cent.

259 were between 20 and 30; of this number, 193 were cured; 66 died, or 25 per cent.

176 were between 30 and 40; of this number, 124 were cured; 52 died, or 30 per cent.

105 were between 40 and 50; of this number, 71 were cured; 34 died, or 32 per cent.

53 were upwards of 50; of this number, 28 were cured; 25 died, or 47 per cent.

The statistics of amputation at the Pennsylvania Hospital will thus compare favourably with those of other hospitals, and with the published reports of cases generally.

So much has been written on "hospitalism" and its influence on amputations especially, that a few general statistics from the records of this, the oldest hospital in America, may not prove uninteresting.

During the past twenty-five years 30,174 surgical cases have been treated, with a mortality of 6¾ per cent. Deducting from the number of deaths

those probably not in any wise influenced by hospital air, viz., those from cancer, fractures of the vertebræ, severe skull and trunk injuries, from gunshot and other wounds of the chest and abdomen, from burns and shock, we have the mortality reduced very nearly one-half. In this mortality are included all the deaths from hemorrhage, exhaustion, grave compound and other fractures, all manner of wounds following surgical operations, erysipelas, and pyæmia. Of the last-named disease, during the past six months not a single case has occurred in the Hospital. With such results it appears that the patients have had as good, or perhaps a better chance than if treated under the usual home influences.

There is no reason to doubt that still more favourable results may yet be attained; from an ample amount of space around each bed, the greatest practicable separation of suppurating wounds, the constant cleansing of the walls and floors, with frequent painting and occasional renewal, forced ventilation by fans and heat flues, and the maintenance of all the needed precautionary care by the daily thorough inspection of the hospital throughout.

NOTE.—In May, 1874, the Managers of the Pennsylvania Hospital appointed an "Officer of Hygiene" or medical inspector as one of the officers of this institution, who is required daily to examine and report the condition of every part of the hospital.

ART. II.—*Rupture of the Perineum. With a Description of a New Operation.* By D. WARREN BRICKELL, M.D., Prof. of Obstetrics and Diseases of Women in the Charity Hospital Medical College of New Orleans. (With a wood-cut.)

A GREAT number of women are the subjects of a partial or complete rupture of the perineum, as a result of the passage of the mature fœtus. Rupture through one or both anal sphincters is comparatively rare, but when such an accident occurs the acute resultant suffering and discomfort are such, that medical skill must be invoked. If the patient is not operated on primarily—that is, immediately after the rupture,—although secondarily, she nevertheless soon comes under the hand of the surgeon.

But, although it is surgically true that anything approaching a considerable rupture of the space between the posterior margin of the vulva and the anus ought to be promptly restored by operation, it is practically true that great numbers of women, high and low, are discharged from the care of physicians and midwives with great loss of posterior vaginal support, and sooner or later they become miserable from uterine or cystic dislocation, or both.

These constitute the larger class falling ultimately into the hands of the surgeon, and their condition is often deplorable indeed, as will be seen illustrated in some cases cited in this paper.

During many years past, I have repeatedly operated for partially ruptured perineum, but only twice for complete rupture. The rupture in these last occurred in the hands of an old midwife, and in both cases the operation was primary, and what is, the world over, called successful; that is, the sphincter ani was restored, and a perineal wall of reasonable thickness was established. In two cases of operation for partial rupture I failed to get union. In one of these cases, a very old woman, the quilled suture was used; in the other, a middle-aged woman of rather frail constitution, the interrupted wire suture was used. In both these cases the rupture was of many years' standing, extended down to the margin of the anus, and wandered decidedly away from the central line—the tissues next the bone towards which the rupture ran being manifestly cicatricial in consistency, as well as positively retracted towards the bone.

Comparing the results of all my other operations with those of other operators coming under my observation, I candidly believe my work will be considered most favourably. But I never arose from an operation, never took an ultimate view of my best result, never viewed the best results of others, without feeling that all the operative procedures resorted to are to a great extent defective—unsurgical, if I may so term them—and, consequently, that general results should be better.

What are the operative methods of to-day—those now generally acknowledged? The clamp suture, the quill suture, and the interrupted suture. The two former are closely allied to each other, and their principle of action is, that to the extent of the superficies of their surface applied on each side of the denuded surface, they will hold such surface directly in contact—the denuded surface behind them being held in apposition by the lateral tension of the sutures, and that in front of them by light auxiliary sutures. The anticipated *modus operandi* of the interrupted suture is the lateral force exerted. These sutures are plunged deeply into the structures on each side of the denuded surface; the free external ends are then twisted together, and the surfaces then approach each other *laterally*.

Now, I contend that neither of these modes of procedure is free from objection, and on purely mechanical grounds. In the case of the plain interrupted suture the truth of my proposition is most clearly seen. I contend that, as the tissues into which we plunge these sutures are soft, in every direction, the force resultant on twisting the external ends, and which must tend to effect lateral apposition, will inevitably exert *antero-posterior* power (drawing the posterior margin of the denuded surface towards the anterior), and *corrugation of the denuded surfaces must ensue*. This corrugation means reduction of the areas of denuded surfaces

brought in contact, and even if union by first intention takes place, it is not by any means to the extent of the surfaces prepared by the knife of the operator. It is not union deeply into the vaginal canal, restoring the wedge-shaped perineum, approximating the posterior vaginal wall to the anterior, and supporting the latter; but it is only the formation of an abrupt wall, which partially closes the gaping orifice between the neck of the bladder and the margin of the anus. And this is the most favourable view to take of things. But I go further, and declare that when these corrugated surfaces are thus brought together, and even when the happiest tendency to union by first intention exists, under the antero-posterior tension that exists, with necessarily retractile effort on the part of the tissues within, the whole corrugated surfaces will not be retained in apposition, for the forces named will cause the wire to cut through the edges on the inside, and in proportion to the extent of this cutting the denuded surfaces slide backward and retire from each other. And this cutting occurs frequently within thirty to fifty hours, or before firm union can take place. This is a point I have practically observed again and again.

But I have known a surgeon to say, why does not this same result occur in front, outside the vulva, where the ends of the suture are twisted together? The answer is obvious. The tension exists both anteriorly and posteriorly, and if the tissues were precisely similar we should look for the cutting as often in the one place as the other; but they are totally dissimilar; the dermoid tissue externally is possessed of far greater power of resistance, hence the weaker tissue must yield first.

But we must not forget that it is not an unusual occurrence for the wires to cut in this way, both anteriorly and posteriorly. I hardly think there can be an operator who has not observed it. And this only more fully illustrates the operation of the mechanical forces.

In regard to clamps or quills, the very same laws apply. Clamps or quills of a quarter or three-eighths of an inch diameter, cannot hold surfaces of one, one and a half, or two inches in diameter in apposition; the same tension exists, and the same results must ensue. Add to this the immediate consequences that sometimes ensue on interruption of circulation by too firm pressure of clamps or quills, and I have learned to estimate the operation as secondary even to the interrupted suture.

If the reader does not clearly comprehend the mechanical difficulties I have tried to explain, let him perform this simple demonstrative experiment. Take a fold of chamois leather, plunge a curved surgical needle armed with a silken ligature clear through one side, run down an inch and a half, plunge the needle back again and through the opposite side, run back opposite the point of departure and plunge through again. Now tie *gently* the opposite ends of the suture, and the surfaces of chamois included by the suture will approach each other laterally; now tie *firmly*, as is essential in the operation under consideration, and he will see the

posterior and anterior portions of the suture approximating each other, with a bunching up or corrugation as the inevitable condition of the approximation.

Now what is the mechanical desideratum, admitting the defects pointed out? Neither more nor less than *lateral* force which will approximate the entire denuded surfaces smoothly *without antero-posterior force exerted on the tissues.* I have carefully searched accessible authorities, and nowhere can I find appliances suggested which meet this all-important indication.

More than two years ago it occurred to me that permanent canulated needles plunged deeply on each side of the denuded surfaces, with wire or silk sutures traversing them, ought to serve the purpose. The general mechanical principle involved is correct, but there is great difficulty in procuring proper needles, and then there is lack of facility of adaptation. And indeed if adapted they constitute at last only a compounding of the main principle involved. The result was that I determined on the simple little instrument, a wood-cut of which is here exhibited. I call it a *perineal*

stay. These stays are made of various lengths, from $\frac{3}{4}$ to $2\frac{1}{4}$ inches in the main shaft, not including the two forked ends. The cut represents exactly one of the sizes made by Tiemann & Co., of New York. The material is supposed to be the very best steel, to avoid bending, and it is nickel plated to avoid irritation consequent on corrosion. The cut shows the stay with its cap or movable internal end off.

How is the stay applied? The parts having been denuded and made ready, the suture is deeply imbedded on each side, as if for application of the quill, clamp, or interrupted suture; a stay with shaft a little longer than the antero-posterior depth of denuded surface is then selected, and its cap put on; now (holding the external ends of the suture in the hand) pass the stay between the denuded surfaces, and fix the cap fork firmly against that part of the suture which shows itself back in the vagina; now let an assistant hold the stay in this position, and let the operator twist the free ends of his suture together; they will soon fix themselves in the *external fork* of the stay, and the assistant can let go. The operator now steadies the external end of the stay with his thumb nail or with a pair of forceps, and then continues the twisting of the suture until he is satisfied with the adaptation of parts. The operator will now see clearly that the *direct* power that has been exerted by his suture is *antero-posterior or through the axis of the stay,* the two forks of the stay being the fixed or antagonistic points of impingement. The *lateral* power exerted is *indirect,* and this approximates the denuded surfaces *smoothly,*

corrugation of tissues being impossible. All of this is readily demonstrated on the fold of chamois skin.

The lower stay having been thus adjusted, a second and a third, if necessary, are fixed above it at intervals of $\frac{3}{8}$ to $\frac{1}{2}$ an inch, and above the highest an auxiliary suture is lightly and carefully adjusted without a stay, just to insure that the upper edges do not gape or slip when the woman may move her limbs. If deemed necessary by the operator, light auxiliary sutures may be placed between the stays in order to bring the edges of the skin nicely in apposition.

The operation being completed in this manner, I have no hesitation in saying that the operator of experience will find the whole locality more firmly held together and sustained for union by first intention, than under any other procedure.

Before I ever operated in this manner I was led to anticipate an objection, viz., fistula resultant on the presence of the stays between the denuded surfaces. Theoretically, I feared no such result. I had watched through years the results of even protracted presence of large metallic sutures, and I had seen no permanent fistula. The same happy results should be expected after the use of a silver or nickel plated stay, if its size be not exaggerated. The results in cases adduced in this paper show the correctness of the conclusion.

The object of having a cap or movable fork on the internal end of the stay, is for facility of removal of the stay when union is attained, say on the fourth, fifth, or sixth day. After cutting the suture, the cap of the stay is held in the vagina by a slender curved forceps, and the shaft is drawn straight out without disturbing the union. The cap is brought out by the forceps through the vulval orifice.

CASE I. *Ruptured perineum; complete prolapsus uteri.*—Mary B., Irish, widow, æt. 40, in United States thirty years; general health good; has had a little diarrhœa recently; has had seven children; first child born eighteen years ago; midwife attended her; was in labour twenty-four hours; second stage lasted from 6 to 10 P. M.; head of child was pressing on perineum for five to seven hours before delivery. Perineum was ruptured during passage of child, no attempt made to heal it. Never had trouble afterwards in second stage of labour; had one abortion nine years ago.

Present condition.—Perineum ruptured to within three-eighths of an inch of the anus. Posterior column of the vagina apparently torn loose from the sphincter of the vulva; tissues soft and healthy; as she lies on the back the vulva gapes widely open; moderate pressure backwards of the posterior wall of the vagina reveals the lips of the uterus just within; pretty firm "bearing down" on her part throws the womb nearly entirely out the body, and its lips are engorged, thick, and heavy, but without ulceration. If she stands on her feet the womb protrudes, her distress is very great, and she is incapable of exertion.

This is the first case on which the stays were used. Those used were made in a hurry by a rude workman, could not be called polished, and on account of negligence of another workman, were not even electro-plated.

The parts were pretty freely denuded, and on account of the great general relaxation, this denudation extended more than half way up the vulval orifice proper. Three stays were applied, with light auxiliary sutures between them, and above and below the upper and lower ones.

Two days after the operation she was seized with active diarrhœa, which at last really became alarming. Night and day she was on the bed-pan, and it was almost impossible to nourish her. The parts operated on maintained a good appearance, however, there being no heat, swelling, or discharge. The stays remained fixed. Her urine was regularly drawn, and the vagina was regularly washed out and anointed with carbolic oil. She was in such a condition of health, however, that I feared union might not have taken place, and I delayed removal of stays and sutures until the end of the tenth day. They were now removed, and extraordinarily good union was found. Each stay was found somewhat corroded, and of course their tracks remained open. In the course of ten days two of these were closed, and when she left the hospital the third had closed. For ten or twelve days after the stays were removed the diarrhœa continued, and altogether she was greatly reduced.

Results.—For some time before she left the ward she was walking about comfortable and happy; the parts were firmly healed, with a deep, thick wall below, and growing thinner as the vulva was ascended. Before discharging her I introduced a moderate sized Hodge bar pessary, advising her that it would be best to wear it for some months. She promises to return for inspection.

CASE II. *Ruptured perineum; complete extrusion of a retroflexed uterus.*—Bridget M., Irish, æt. 40; in New Orleans twenty-three years; single; general health pretty good; signs of syphilitic taint; does general housework, cooks, washes, etc. Declares she never had a child, but physical evidences contradict her.

Present condition.—Perineum has been ruptured half way to the anus, and to the right of the median line; fibres of the posterior column of the vagina have also the appearance of being broken loose from the vulval sphincter. In the erect posture the uterus drops entirely outside the body; in the recumbent posture she readily extrudes it, and when out it is found to be completely *retroflexed*, a condition I have never before observed. Of course she is utterly miserable.

On the 29th of November, she was operated on precisely in the same manner as Case I., two stays only being used. No untoward symptoms occurred; very little local heat, and moderate swelling; but she is a restless and nervous patient. Stays and sutures were removed on the morning of the 11th day. Stays in this case were of plain steel.

Result.—Union throughout the extent of denuded surfaces, except in seats of stays. Both of these instruments were much corroded, and the fistulous tracts were distinct, the lower one especially. At the end of eight days the upper fistula was closed. The lower fistula was larger and required cauterization. When she left the hospital it was nearly closed. A Hodge pessary was introduced, and she went away happy, promising to return for inspection.

CASE III. *Ruptured perineum; complete prolapsus uteri; cystocele.*—Catharine S., German, æt. 36; married eight years; had three children, first one ten months after marriage; perineum ruptured in first labour; general health pretty good; does all sorts of housework; came in December 5th, because unable to work longer for her family.

Present condition.—Distinct cystocele, with great hypertrophy of the tissues of the neck of the bladder; in the erect position the uterus protrudes one and a half inches; lips highly engorged, but not ulcerated; perineum ruptured to within three-eighths of an inch of the anus, ruptured to the right of the median line; on this side the tissues are firm and cicatricial, on the left they are soft and superabundant; vulva gapes widely as she lies on her back; posterior vaginal column presents appearance of being torn loose from its lower attachments; the original laceration must have extended freely into the vagina, as is indicated by cicatrization.

Operation.—Performed double operation December 9, 1874: 1st. For reduction of capacity of vesico-vaginal wall, by extensive denudation from near meatus urinarius to the womb, and the application of ten transverse *catgut* sutures, interrupted. 2d. By deep and free denudation of lower wall, extending considerably up the sides of the vulva, and then the application of two silver-plated stays, with light auxiliary sutures, as in Case I.

Not a single untoward symptom occurred in this case, no local heat or swelling. On the sixth day the stays and auxiliary sutures were removed, and perfect union in every part had taken place, save only in the seats of the stays. But these stays were not at all corroded, their tracks were very small, and in a few days they closed entirely. The finger carefully passed along the vesico-vaginal wall, could detect no catgut sutures, and there was firm union throughout.

Result.—This woman was discharged wearing a Hodge pessary, and had the best artificial perineum I ever saw.

CASE IV. *Relaxed vagina and perineum; cystocele; protrusion of uterus.*—Mary J., Irish, 19 years in New Orleans; æt. 52; widow with five children; married at fifteen; widow at twenty-seven; had thirteen children and one abortion in that time; no plural births; tall woman of large frame and muscular; cooks, washes, etc. Entered hospital September 14th. I took charge of her in October.

Present condition.—Complete relaxation of vaginal walls, with bagging of perineum, but no rupture. Vulva gapes widely as she lies on her back, and it is clear to my mind that the lower end of the posterior column of the vagina is broken loose from the sphincter of the vulva. Very moderate exertion throws the vesico-vaginal wall clear outside the vulva, and the lips of the womb, which are much engorged, also protrude. She is no longer able to work for her children.

First operation.—This case presented before my stays were made, and although without much faith, I operated for reduction of the vesico-vaginal wall by extensive denudation, and the application of ten transverse interrupted sutures of silver wire. Good cicatrization was procured, and the womb was drawn high up while she lay on her back; but when she began to walk about, there being no posterior and inferior support, descent began. The result was a

Second operation, for reduction of *posterior* wall, and partial closure of the vulva. The denudation in this case was carried to the depth of 2¼ inches on the posterior wall, and gradually tapered up the sides of the vulva. Before placing the stays, three *catgut* sutures were placed *across* the posterior wall, in order to overcome the great amplitude. Above these were placed two plated stays, and then light auxiliary sutures.

In this case I tried another experiment. Instead of applying a silver suture to the lower stay, I applied the catgut, tying it in the external fork of the stay. On the morning of the sixth day the stays and silver

sutures were removed, but the catgut sutures were not disturbed. The union in every part except the tracks of the stays was perfect. In a few days these tracks closed.

Result.—The result in this case is certainly most satisfactory. The healing in all parts of the denuded surface is complete; the posterior wall of the vagina is very much contracted, and is drawn up against the anterior. At this moment the patient is still in hospital, but she will soon be able to leave with a pessary applied. When lying on her back she is no longer able to extrude bladder or uterus.

Remarks.—1. It will be seen that in Cases I. and II. the tendency of the stay to produce permanent fistula was thoroughly and most satisfactorily tested. Not only were the instruments used of naked steel, imperfectly polished, but they were permitted to remain *in situ* twice as long as is at all necessary; yet four out of five tracks healed up readily, and the fifth was steadily closing when the patient left the hospital. I early determined to fully test this point in the operation, for conversation with medical gentlemen showed me that this was an objection in nearly every mind. The experiments made ought to be considered satisfactory.

2. Notwithstanding the active and really dangerous intercurrent diarrhœa in Case I., and the evident syphilitic taint in Case II., the solidification of structures in the true perineal region of each case is far more satisfactory than I have been in the habit of seeing. There is no abrupt wall which merely closes the external gaping orifice, but a thick triangular space between the posterior vaginal wall and the rectum. The vaginal walls are also brought together, and there is the clear prospect of mutual support.

In Case III. this same result is achieved, only more completely, as I denuded more thoroughly on acquiring confidence in the mode of operating.

3. In Case IV. there was no rupture of perineum, but free reduction of amplitude of posterior wall and vulval orifice was necessary, extensive denudation was resorted to, and the result is most satisfactory. In all the cases general relaxation was such that partial closure of the vulval orifice was deemed necessary, and the stays acted most satisfactorily.

4. *Catgut sutures.*—I cannot forbear calling especial attention here to the use of catgut sutures in this operation. We all know that while the metallic suture is in one respect innocuous, nevertheless it is wholly inelastic, and wherever there is much resistance there is the tendency to cut. In Case IV. I used catgut instead of silver wire on the lower stay; both sutures, catgut and wire, were plunged very deeply on the sides, and both were drawn tightly on the stays. Although both stays were removed on the morning of the sixth day, the silver wire was found cutting the skin by lateral pressure, while the catgut, in consequence of a manifest elasticity (somewhat increased since introduction), had not cut at all. It was also noticeable that the little auxiliary silver sutures were cutting.

In describing the operation in Case IV., I mention the application of three lateral sutures to reduce amplitude of the posterior vaginal wall. Of course, these sutures were entirely covered up in applying the first stay, and they appear to be completely absorbed. Even the catgut suture that was applied to the first stay in this case was not removed when the stay was; it was simply cut off close to the sides, and it seems to have been entirely absorbed.

In this Case IV. I also applied ten catgut sutures laterally to the vesico-vaginal wall; the wall has healed beautifully, and there is no trace of the sutures. On the basis of these experiences I am led to prefer the catgut to the wire, and I shall experiment further and more fully.

In conclusion, I repeat, that so far as my researches go, I find no mention made of the necessary observance of the mechanical principle I have pointed out in the treatment of this surgical affection, nor of any even similar contrivance for the satisfactory demonstration of the principle. If the ideas have ever been advanced before, I only wonder that they have not commanded the attention of the profession. Both theory and practice prompt me to urge the operation on the reader; I am sure he will not regret a resort to it. I believe the application of the mechanical principle indicated may in all probability be extended to some other plastic operations. Modifications of the little instrument used will probably be made; already I am about suggesting one to the instrument maker.

POSTSCRIPT, Feb. 8, 1875.—While the foregoing was passing through the press I was operating on Case 5. I have only time to say that in this case all sutures used were of catgut; that two of these were placed transversely across the posterior wall far in the vagina, to effect reduction of amplitude; that two others were wholly auxiliary—one being above and the other below a single stay also fixed by a catgut suture—that the stay was removed at the end of the fifth day, and that all the sutures were allowed to remain *in situ*, as purely experimental.

The result in this case is really beautiful. No fistula exists, the wedge-shaped perineum is restored solidly, the posterior vaginal wall is drawn closely to the anterior, and at the time of writing all traces of catgut sutures are gone.

This case most clearly illustrates the superiority of catgut suture. They held the denuded surfaces fairly in contact, never irritated at all, and there was not the slightest cutting resultant on tension.

ART. III.—*Examination of Coloured School Children's Eyes.* By PETER A. CALLAN, M.D., Assistant Surgeon to the New York Eye and Ear Infirmary.

EXAMINATIONS of schools in Europe, in order to determine the refraction of the scholars' eyes, have of late years been of quite frequent occurrence.

Jäger was one of the first to make examinations, and the only one to determine the refraction in new-born children; he was followed by Cohn, of Breslau, who tabulated 10,060 school children. Erismann and Dobrowlsky of St. Petersburg, Hofman of Wiesbaden, and many other European oculists, made examinations of schools and universities, and all found an increase of myopia in the higher classes of the lower schools, and in the higher schools and universities alarmingly high percentages of myopia. The increase of myopia could, in a great part, be shown to depend on badly lighted studyrooms, unsuitable seats and desks, too long continuous hours of study, and a confined range of vision.

Jäger's examination is quite interesting, inasmuch as all his calculations had to be made with the ophthalmoscope, no other means being possible under the circumstances, and as there are but few, if any, who excel him in the use of that instrument, his results must be regarded as accurate. He found 75 per cent. of myopia amongst the new-born children, ranging in degree from a $\frac{1}{30}$ to a $\frac{1}{4}$. Only in a few cases was posterior staphyloma (conus) present. This very large percentage of myopia is due to the great thickness of the infantile lens, and to the as yet imperfectly developed zonula zinnii, not being able to exert any influence on it. Cohn tabulated 10,060 school children, 6059 of whom he examined personally. He examined the scholars with test-types at 4 feet distance, and in this way most of the cases of myopia less than $\frac{1}{30}$ escaped, and were reckoned to the emmetropes. The same author[1] in 1871 examined some 240 village school children, and found 88 per cent. apparently emmetropic. In each of the apparently emmetropic eyes he put s. atropia. When the accommodation was completely paralyzed, the emmetropes were again examined, and as a result all the emmetropes became hypermetropes; the greatest number ranging in degree from a $\frac{1}{30}$ to a $\frac{1}{10}$ of hypermetropia.

Erismann[2] found in his investigations as high as 42 per cent. of myopia in certain classes, and only 26 per cent. in the whole school, while hypermetropia in the lower classes amounted to two-thirds. Commenting on this large number of H. in the lower classes, he adds: "Hypermetropia is the normal refraction of the healthy youthful eye, and not that which we denominate emmetropia, still less myopia, as they are only the excep-

[1] V. Græfe's Archiv, vol. xvii., part 2, p. 315.
[2] V. Græfe's Archiv, vol. xvii., part 1, p. 1.

tion at that age. . . . . The smaller portion remain hypermetropic, but the *greater number become myopic*, having passed through a transitory state, *i. e.*, emmetropia; some remain, however, in this state through fortunately favouring circumstances."

Donders' views on this subject are decidedly in opposition to the above. His doctrine is, youth hypermetropia, adolescence emmetropia, old age hypermetropia acquisita.

Donders, in his classical work,[1] remarks, under Chapter V.:—

"*The Emmetropic Eye.*—Slight degrees of H. are in youth not even to be proved, much less to be reduced to their numerical value; indeed, whenever a deficiency of refractive power exists in the eye, when in a state of *absolute rest*, it is supplied by the accommodation. And even if the eye in paralysis of accommodation should be emmetropic, the tone of the accommodation alone affects a slight degree of myopia, consequently the actually emmetropic vision requires, in a certain sense, a minimum of H., and that minimum is capable of no accurate taxation, because to the tone itself a certain latitude, perhaps from $\frac{1}{100}$ to $\frac{1}{40}$, should be allowed.

"In this sense, and it is practically the only correct one, the majority of eyes are undoubtedly emmetropic."

The selection of coloured scholars was not made without good reasons. Heretofore nearly all the examinations have been made in Germany, and, needless to remark, on whites. It is to most familiar that there is a very large percentage of myopia amongst the students in the gymnasiums and universities of Germany; the percentage is much greater there than in the other countries of Europe. The Germans acquire myopia by their long years of study, having perhaps inherited a predisposition to it, or inherited it already developed and increased in attaining their manhood. Our coloured brethren as a rule never did enjoy a thorough system of education. The present generation in New York may be said to enjoy as thorough as the city affords; but their forefathers did not; neither have they been raised to such persuits as demand a very close application of the eyes, viz., engraving, etc.; *cæteris paribus* the negro's eye should approach nearest to a natural eye, *i. e.* normal eye. The very best material for examinations of this kind could be obtained in the Southern States, where, until of late years, the negro was unjustly debarred from the luxury of spoiling his eyes, *i. e.* a modern education.

The examination was begun last spring, and finished before the summer vacation. In examining the scholars, Snellen's test types were also—"A" and "E" old and new series—placed in the wall of the study room. The scholar to be examined was placed 30 feet distant from test types, and each eye alternately tested on card "A" for example, the result being noted; then convex and concave glasses were placed in turn before each eye, and

[1] Accommodation and Refraction, 174, German edition, 148.

pupil asked to read card "E." This changing of the examined card was to prevent learning by heart and consequent deception on the part of the scholars. Each pupil was likewise tested for colour blindness. Cohn was very fortunate in being able to examine two hundred and forty scholars' eyes under the influence of s. atropiæ, an opportunity which does not present itself very often, and such a procedure was entirely out of the question in the present instance, particularly as the coloured children feared from the first, that their eyes were by a species of legerdemain to be taken out, and then and there replaced: a belief, by the way, which is not confined to coloured children, but to very large children of the Caucasian race. Not being able to put s. atropiæ into the scholars' eyes, we put it in our own, so as to thoroughly paralyze the action of the ciliary muscle, and kept our eyes in that condition during the ophthalmoscopic examination of the scholars' eyes. Each scholar's eyes were separately examined with the ophthalmoscope in the upright image, and the correcting glass used to view fundus distinctly gave the refractive condition of the examined eyes. In this manner the examination was made with all due accuracy. Our eyes being under the free influence of s. atropiæ, we were not able to use our accommodation, and the glass used to see the fundus gave the desired refraction.

In theory it is quite simple to estimate the refraction by means of the ophthalmoscope—the refraction of the examiner's eyes being known, say emmetropic, and if he sees distinctly the fundus of examined eye without accommodating or the aid of glasses, then is the refraction of examined eye likewise emmetropic; but if he does not accommodate, and can only see with minus or plus glasses as correction, then there is myopia or hypermetropia, of a degree indicated by the glass, plus the distance of nodal points of both eyes in myopia and less the distance in hypermetropia. When the examining surgeon is ametropic, then his refractive condition must be taken into consideration.

Apparently it involves a small amount of calculation in any given case, when the refraction is obtained, but a very important factor must not be lost sight of, viz., can the examiner avoid accommodating, and rely on his correcting lenses in the ophthalmoscope in order to see the fundus of an examined eye distinctly?

We all know how difficult it is, when examining in the direct or upright image, to avoid using our accommodations, and what a large amount of practice in the use of the ophthalmoscope it demands, before we can say that our ciliary muscle is under our control; in order to avoid this difficulty, and place the results of an examination beyond dispute, s. atropiæ must be used either in the eyes to be examined, if possible, or in the examiner's own eyes.

Two public schools were examined; both together contained 457 scholars.

The following is the result of the examination: 431 emmetropic, 94 per cent.; 12 myopic, 2.6 per cent.; 14 amblyopic, 3 per cent.

Public School No. 3 contained 293 scholars: 274 emmetropes, 10 myopes, 9 amblyopes.

Public School No. 4 contained 163 scholars: 157 emmetropes, 2 myopes, 5 amblyopes.

School No. 3 has a percentage of 3.4 per cent. myopes, while School No. 4 has only 1.2 per cent. myopes; the explanation is that School No. 3 has an excellent corps of teachers, and is really the coloured high school, and, in consequence of its superior advantages, is frequented by scholars of well-to-do parents from all parts of the city proper, Manhattanville, and Harlem.

School No. 4 has only a local attendance. Had we examined an equal number of white scholars, we are fully satisfied that our examination would show a much larger percentage of myopia than that found amongst the coloured scholars, viz., 2.6 per cent.

Public School No. 3. Primary Department.

Classes.	Boys.	Girls.	Ages.	Emmetropes.	Myopes.	Amblyopes.
1st and 2d Class,	19		9—17	18	0	1
" "		21	"	19	0	2
3d and 4th "	32		7—15	32	0	0
" "		36	"	35	0	1
5th and 6th "	27		5—12	26	0	1
" "		36	"	35	0	1
Total,	171			165	0	6
Per cent.				96.5		3.5

Grammar Department. School No. 3.

Classes.	Boys.	Girls.	Ages.	Emmetropes.	Myopes.	Amblyopes.
1st and 2d Class,	8		12—19	6	2	0
" "		16	"	13	2	1
3d and 4th "	14		10—17	11	3	0
" "		19	"	18	1	0
5th and 6th "	13		10—17	13	0	0
" "		14	"	12	2	0
7th and 8th "	24		9—15	24	0	0
" "		14	"	12	0	2
Total,	122			109	10	3
Per cent.				89.3	8.2	2.5

In the above public school there were nine cases of amblyopia, three of which depended on astigmatism, and for convenience, put under that head, as likewise one case of mixed refraction, the one eye being myopic, whilst

the other was hypermetropic; the remaining five cases depended on macula cornea.

Primary Department. Public School No. 4.

Classes.	Boys.	Girls.	Ages.	Emmetropes.	Myopes.	Amblyopes.
1st and 2d Class,	20		6—13	20	0	0
" "		24	"	24	0	0
Total,	44			44		

Grammar Department. Public School No. 4.

Classes.	Boys.	Girls.	Ages.	Emmetropes.	Myopes.	Amblyopes.
1st and 2d Class,	15		12—19	15	0	0
" "		26	"	23	1	2
3d and 4th "	12		11—18	12	0	0
" "		30	"	29	0	1
5th and 6th "	14		11—17	14	0	0
" "		23	"	20	1	2
Total,	120			113	2	5
Per cent.				94.2	1.6	4.2

In Public School No. 4 there were only five cases of amblyopia, two of which depended on astigmatism; the remaining three cases on macula cornea.

The following tables show the number of scholars who were able to read the test types at the given distance with concave and convex glasses. In the majority of cases, in testing with convex glasses the scholars could not see well with them, but making them close the eyes and remain so for a short period of time, then again trying they had a vision of $\frac{20}{20}$. Very few of them but gave the preference to concave glasses, and in about 10 per cent. of the scholars they imagined that the concave glasses magnified the letters, the convex making them smaller.

This preference of concave to convex glasses is easy to explain, inasmuch as it is quite easy for the youthful hypermetropic eye to concentrate divergent rays upon the retina; but for the same eye to avoid accommodating, which is necessary in order to see with the convex glasses, is at first difficult and only to be obtained with a little practice. The tables for the convex glasses represent the number and degree of facultative hypermetropia in both schools.

Facultative Hypermetropes.

Age.	Boys 125. Numbers of Convex Glasses.							Girls 164. Numbers of Convex Glasses.						
	72	60	48	42	36	30	24	72	60	48	42	36	30	24
6				1	1					3	1			
7			1	2							2		3	
8			3	2	7	3			1	2	11	3	1	
9			4	3	2	1			1	6	6	5	2	
10		2	6	7	3	2				2	5	8	2	
11			2	2	5	4			4	5	5	3		
12	1	3	4	5	3	4			2	9	4	5	3	
13	1		2	4	2	2			1	1	6	6	2	
14		2	2	4	2			1	1	5	6	5		
15	1	1	5	4	1			1	1	4	4	5		
16	1	1	1	1		1			1	1	1	2		
17			1		1				1					
18				1					2	2				
19					1				1					
Total	4	9	31	36	28	17		2	16	40	51	42	13	
Per cent.	3.2	7.2	24.8	28.8	22.4	13.6		1.2	9.1	24.5	31.1	25.6	7.9	

Only the scholars with an acuity of vision of $\frac{20}{20}$ were tested with convex and concave glasses, and higher degrees of concave than convex glasses were accepted, as can be seen by the following tables, in which we omit the details and give only the general results :—

Age.	Boys 131. Numbers of Concave Glasses.								Girls 167. Numbers of Concave Glasses.							
	72	60	48	42	36	30	24	20	72	60	48	42	36	30	24	20
6				1	1				1		2	1				
7			1		2							2		1	2	
8			3	5	4	1	2				2	8	4	2	3	
9			3	3	3		1				4	9	7		1	
10			4	7	4	3	3				2	3	6	2	3	1
11			2	4	4	5	2			3	4	4	5			
12		1	2	6	4	3	3			1	4	5	6	4	2	
13		1	1	4	4	2	1	2			2	2	8	3	1	1
14		1	2	1	3		2		1	1	2	4	6	4	1	
15		1	2	4	4	1				1	2	3	5	2	1	1
16			1	1	1		1					1	1		1	1
17							1			1	1					
18				1	1					2	1	1		1		
19							1			1						
Total	0	4	21	37	35	15	17	2	2	10	26	43	48	19	15	4
Per cent.	0	3	16	27.7	27.4	11.4	12.9	1.6	1.1	5.9	15.8	25.7	28.8	11.5	8.9	2.3

It will be seen from the following table of percentages that amongst boys 3 per cent. more in favour of the concave glasses were found, whilst there is only a difference amongst the girls of 0.4 per cent. in favour of concave glasses.

Scholars.	Convex Glasses.	Per cent.	Concave Glasses.	Per cent.
Boys 191	125	65.4	131	68.5
Girls 240	164	68.3	165	68.7
Total. . . . 431	289	67.	296	68.6

Each scholar was tested with one eye, then with the other; the second column shows the number of scholars who saw $\frac{20}{20}$ with convex glasses, and the fourth the same with concave glasses.

67 per cent. of the 431 examined presented facultative hypermetropia. Erismann found only 43 per cent., while Cohn found as high as 77 per cent. in *their respective* examinations.

The ophthalmoscopic examinations were made in the forenoon, and extended over a period of five weeks, during which time both eyes of the examiner were under the influence of a four-grain solution of s. atropiæ applied three times daily, so that the accommodation was completely paralyzed. Forty-nine of the apparent emmetropes refused to have their eyes examined with the ophthalmoscope any further, in some few cases the mothers not wishing it; the great reason was fear on the part of the scholars, and as we had not time to try and persuade them, they were lost to the ophthalmoscopic examininations.

The following tables show the refraction of the scholars' eyes as tested with the ophthalmoscope. First column, ages; second, emmetropia found; and the following, the different degrees of hypermetropia :—

Hypermetropia.

	Boys 188.											Girls 194.						
	Hypermetropia.											Hypermetropia.						
Ages.	Em. ∞	$\frac{1}{60}$	$\frac{1}{36}$	$\frac{1}{30}$	$\frac{1}{24}$	$\frac{1}{20}$	$\frac{1}{17}$	$\frac{1}{15}$	$\frac{1}{14}$	$\frac{1}{13}$	$\frac{1}{54}$	Em. ∞	$\frac{1}{60}$	$\frac{1}{36}$	$\frac{1}{30}$	$\frac{1}{24}$	$\frac{1}{20}$	$\frac{1}{17}$
6	1		3	2								2	1	2	1			
7	1		3		2				1				2	2	2	1		
8		4	4	8				1		1			3	8	3	1	2	1
9	2		3	3	2	4	1	1	1	1	1		2	7	3		1	1
10	1	2	7	4	3	1	1	1	1	1		2	6	5	5	2	1	
11	1	3	5	4	3	1	1	1						6	5	2	4	2
12	4	4	6	6	1	2				1		2	1	8	5	2	1	2
13	1	3	10	2	4			1	1			3	3	7	9	4	1	
14	2	7	4	2	3	1		1				3	5	5	4	2	1	
15	1	1	3	3	1			2				3	4	5	4	1	1	2
16	1	1	4	2	1			1	1				2	3	2	1	1	1
17	2		2	2								2		1	1			
18				2								1	1	2	1			
19			1									1		1				
Total	17	25	55	40	20	9	3	9	5	4	1	19	30	62	45	16	13	9
Per cent.	9	13.4	29.3	21.2	10.6	4.8	1.7	4.8	2.6	2.1	0.5	9.8	15.5	31.9	23.2	8.2	6.7	4.7

Percentages of Ophthalmoscopic Examinations.	Em. ∞	1/30	1/20	1/15	1/14	1/10	1/17	1/12	1/11	1/9	1/5½	Total.
Boys . . . 188	9.0	13.4	29.3	21.2	10.6	4.8	1.7	4.8	2.6	2.1	0.5	100
Girls . . . 194	9.8	15.5	31.9	23.2	8.2	6.7	4.7					100
Total . . 382	9.4	14.4	30.5	22.3	9.4	5.8	3.2	2.4	1.3	1.0	0.3	100

As is shown by the above table of percentages of the 382 apparent emmetropes, examined with the ophthalmoscope, only 9.4 per cent. were found to be emmetropic, whilst 90.6 per cent. were found to be hypermetropic.

The following table comprises the myopes in both schools, male and female; two more females were myopic than males :—

Myopia. Males and Females.

	1/21	1/18	1/14	1/10	1/15	1/12	1/8	1/7	1/4
6									
7									
8									
9									
10	1								
11	...	...	...	1					
12	...	...	...	...	...	1			
13									
14	...	...	1	...	...	...	1		
15	...	...	1	...	...	...	...	1	
16	...	...	...	...	1				
17	...	1	...	...	...	...	1		
18	...	1	...	...	...	...	...	...	1
19									
Total,	1	2	2	1	1	1	2	1	1

The acuity of vision was tested in all cases, but we only make use of the 431 apparent emmetropes.

We believe Snellen's test-types to be the most reliable for distance. His xx can be read by young subjects very often at much greater distance, but taking it as a standard for average vision it is quite good. Very often xx of A series is incorrectly given; for instance, U is rendered as V, Y taken for T, C and G mistaken for O, and there are but few who see the figure 2 distinctly. All these letters have been changed in series E, new edition.

Acuity of Vision.

	20-24/20	25-29/20	30-34/20	35-39/20	40-44/20	45-49/20	50/20	Total.
Boys	126	35	22	3	3		2	191
Girls	189	28	18	3	1	1		240
Total	315	63	40	6	4	1	2	431
Per cent. . . .	73.1	14.7	9.3	1.4	0.9	0.2	0.4	100

As can be seen by consulting the above table, 73 per cent. had a normal vision; not quite one per cent. had a vision of $\frac{2}{10}$, whilst the highest found was a vision of $2\frac{1}{2}$ or $\frac{5}{2}$. Still greater degrees of acuity of vision have been found by other examiners, but then they can be regarded as curious cases, and not for a moment to be taken as a standard.

Three cases classified under amblyopia as macula cornea presented a rather singular form of eye disease—hypertrophy of the limbus. All around the cornea at limbus an elevated ring extended, keeping as it were the sclerotic and cornea in position. This ring was grayish-white in colour, devoid of vessels, 3 mm. in width, and $\frac{1}{2}$ mm. to $1\frac{1}{4}$ mm. in height. In the sclerotic there were some fine vessels running towards the limbus, but they did not appear to penetrate into it. The cornea was quite hazy all around its circumference, and the haziness extended about 2 mm. towards its centre. (No colour blindness found among the scholars.)

During the examination of the scholars we found three cases of persistent hyaloid artery, two boys and a girl, and, singular enough, in the left eye of each. Considering the number of scholars in the two public schools examined, and the comparatively few cases on record of persistent hyaloid artery, the number is very large. Are we to expect to find more such cases in the coloured race than in the white? The three cases will soon be published in full. Should our results cause similar examinations of other coloured schools, we would consider ourselves amply repaid for our time and trouble.

ART. IV.—*Spinal Arthropathies.* By S. WEIR MITCHELL, M.D., Member of the National Academy of Sciences.

IT has been my good fortune within the last two years to meet with a number of cases of disease of the joints of the legs, associated in each instance with atrophic states of limited groups of muscles, and offering more or less distinct clinical evidence of being due to spinal disease. I shall have occasion, as I proceed, to show how these cases differ from any as yet described, both in their early symptoms, and in their more favourable prognosis, but I shall perhaps make clearer my meaning, if first I call attention, however briefly, to the history of spinal and neural arthropathies, a subject which owes its best study to American and French students. The history of spinal arthropathies is well told by Charcot, in his *Leçons sur les Maladies du Système Nerveux*, Paris, 1872–73, p. 100 et seq. This author distinguishes joint lesions of spinal origin as of two varieties. Those which are acute or subacute and are accompanied with redness, swelling, and sometimes with more or less violent pain. The

second class he describes as chronic, of slow growth, and, as I shall point out, as being remarkably different from the first-named disorders.

The history of this subject is somewhat interesting, and the more so, because to an American physician belongs the long-forgotten credit of the first discovery that "an obvious spinal cause may produce a rheumatism characterized by heat, pain, redness, and tumefaction." The quotation is taken from the second paper on rheumatism by my father, the late Dr. John K. Mitchell. In his first essay he described cases of Pott's disease, in which, below the diseased region, there were acute inflammations of the joints, which proved amenable to treatment directed to the point of spinal lesion.[1] M. Charcot, *op. cit.*, p. 100–101, in acknowledging the first mention of these facts, adds, correctly, that this cause of arthropathies is rare, and, apparently ignorant of Dr. Mitchell's second paper,[2] says that traumatic lesions of the cord are more often the parent of joint disorders, and refers to Gull[3] for instances of spinal commotion as competent to occasion a like result. Until in my work on injuries to nerves I recalled attention to the true author of this clinical discovery, Gull has usually had credit for being the first original observer of these interesting facts, while actually the credit is due to the American author. In his second paper Dr. Mitchell describes the very curious case of Dr. Parker of Elkton, Maryland, in Oct. 1831. This gentleman, who had previously had rheumatism, was thrown from his carriage, and, falling on his back, was instantly paralyzed slightly in his arms, but totally in his lower limbs. The next day he had swelling, pain, redness, and heat in the joints of the hands and wrists. These symptoms were thereafter aggravated by pressure upon the seat of injury in the spine, but relieved by the application of certain remedies to the spine. They shifted their place from joint to joint in the upper limbs, but did not affect the legs.

In 1846, Dr. Scott Alison[4] described very clearly the arthropathies which occur in hemiplegia, but incorrectly ascribed them to the lithic diathesis under which he presumed his patients to be suffering, and to which he conceived all such cases must be due. Since then, Brown-Séquard, Charcot, and the author, as well as some others, have recalled attention to hemiplegic arthropathies. Like forms of joint disease have been seen in myelitis, and as results of spinal tumours, while in locomotor ataxia, Charcot has delineated with great fidelity a more chronic but not less troublesome form of joint disease.

According to Charcot, similar lesions have been seen in progressive muscular atrophy by Patruban, Remak, and Rosenthal, but I have been unable to procure the papers referred to. Finally in 1864, I described, in conjunction with Drs. Morehouse and Keen, the joint diseases caused

[1] Am. Journ. Med. Sci., 1831, p. 55. [2] Am. Journ. Med. Sci., 1833, p. 360.
[3] Guy's Hosp. Repts., 3d series, t. iv. [4] Lancet, 1846, vol. i. 227.

by injuries to nerve trunks, and again and again since I have illustrated anew this clinical sequence, by numerous reports of cases of manifold forms of nerve injury.

The pathological mechanism of the various neural arthropathies is clear only up to a certain point, beyond which all is as yet obscure. It has been made most probable, that all the spinal arthropathies are due to disease of the gray matter of the anterior cornua of the cord. It has been shown that this disease of the gray matter is not caused by the inertia to which some forms of spinal disease condemn the patient, and that neither in these cases are the peripheral nerves at fault. It has also been suspected that the cerebral arthropathies are caused by a descending sclerosis finally involving the anterior tracts of gray matter in the cord, but as to this I have a reasonable doubt, owing to the very early date at which I have sometimes seen joint lesions follow a cerebral hemorrhage, and to the suddenness of production, and the great generalization of the joint lesion in some of the same class of cases. It has been remarked that the joints swell from fifteen days to three months after an apoplectic attack, coincidently with the coming on of the "late rigidity," which we now commonly ascribe to descending sclerosis. I have, however, again and again seen the joint lesions come on earlier, and without any muscular rigidity, and I have also seen them get entirely and rapidly well, which does not look as if they could in these cases have been due to sclerosis. Thus in one case, they came on the day after an attack of left hemiplegia, in another on the third day.

The local peculiarities of most of the spinal and cerebral arthropathies are not such as enable the most acute clinical observer to distinguish them from some of the ordinary types of rheumatism, a fact which certain authors have frankly admitted. The general clinical characters, says Charcot, which differentiate them from common rheumatism of joints, are their limitation to the joints of the members afflicted with palsy, their relation in time to hemiplegia, the coexistence of other trophic troubles; but, if we begin by suspecting that some at least of our general rheumatisms may be of spinal birth, these would be only points in our favour, and the cases of Pott's disease in which remote joint lesions follow it, without palsies, would enable us to believe that such a spinal condition from disease might sometimes exist as would give rise to rheumatic joints without the concurrent existence of other troubles more palpably of neural origin. Moreover, it has occurred to me twice, to see cases of chronic rheumatism following acute rheumatism where an apoplectic attack produced a few days later an enormous exaggeration of the joint disease on the palsied side, so that there is something in the status of a palsied limb which favours the increase of an already present rheumatism.

Yet, however we may differ as to whether rheumatic fever be ever a spinal disease, all pathologists now admit the existence of joint disease

distinctly due to neural lesions, but as to the mechanism of the production of these arthropathies, we are still at fault. Our discovery of arthropathies caused by injury of nerve trunks, seemed to promise to make the research more simple, but as yet it has done little to aid us. It has been made clear, however, that in these, as probably in central lesions, they are due rather to irritative states than to absolute defects of power. It has been shown that they are caused neither by vascular palsies nor by vasal spasm, nor yet by inertia, which is, as we know, competent to cause, in limbs long at rest on splints, certain chronic forms of joint disease. I have certainly seen neuro-traumatic joint disease break out suddenly and with terrible severity within three days of a nerve lesion, which but slightly affected either motion or feeling, and which certainly gave rise to no atrophies, so that it also seems unfair to attribute them to defects of nutrition in this sense or in this direction.

I have elsewhere pointed out how curiously even very slight lesions of nerves affect the cutaneous secretions, and it seems fair to infer that disturbances in the chemical balances of the deeper tissues may likewise arise from as slight neural causes. How far these may also come from central disease, and how competent in either case they may be to trouble the life of the tissues and occasion local inflammations, we can hardly yet determine. It is but an hypothesis, yet of some value as giving a fresh direction to research. It is indeed hardly possible to refrain from speculation upon a subject at once so open and so interesting.

I have seen but one case of entire annihilation of nerve influence in a limb, and in this all the nerves were cut save the fibres which pass with the vessels. No notable joint lesions followed the section. The sections of single nerves never altogether insulate neurally a part even of a limb or lesser member,[1] but it is commonly the partial sections of one nerve which cause joint disease, and then arises this curious question: Do they act directly along the injured peripherally distributed fibres and thus affect the joint, or does the local irritation influence the centre, and through it and the still entire nerve threads act upon the joint to disorder its nutritive life? I incline to this latter opinion, which is favoured by various reasons, and especially by some of the cases I have elsewhere reported. But if this view be taken and we come to conceive of a state of the centres in which there were disturbance from without competent to put them in a state to cause joint lesions, we are readily made able to add another step in belief, and conceive that sometimes these centres may without peripheral irritations be thrown into such a state as to occasion these lesions.

Hitherto, in all of the reported cases of neural arthropathy, there has been a passive central or peripheral nerve lesion, and usually there have been also precedent symptoms not related to the joints, such as atrophy,

[1] Section of a nerve always leaves the joint in relation with other undestroyed branches.

paralysis, anæsthesia, or hyperæsthesia. In three of the four histories which I shall here relate, the joint lesion came first, existed alone for a time, and was followed by other nutritive, sensory, and motor conditions of the limbs, which revealed the spinal column as the organ upon which the whole chain of phenomena depended. Surely this is a fact of great pathological significance, since it is open to suspect that if the spinal lesion had been checked at a certain point we might have had only the joint disease, or such slight derangements in the way of numbness or lack of power as might readily escape notice, or as often are seen by acute observers in rheumatisms suspected by no one to be of neural birth. One possible fallacy may exist to mar this view of the pathogenesis of some arthropathies, and to it I shall by and by refer.

CASE I.—Mr. B., of E. Pennsylvania, consulted me last year in the autumn, on account of a painful affection of the right knee-joint. Mr. B. was a bank officer, æt. 48, of slight figure, free from previous disease, and of untainted descent. In the spring of 1873 he was subject to severe mental and moral strain, and for some weeks to unusual exertion a-foot. In June he had slight pain in the dorso-lumbar spine, which was eased by rest. The accompanying sense of lassitude left him after a short summer holiday, but early in September he began to have pain and swelling and stiffness in the right knee, and at length was forced to remain at rest, the knee having been put in a splint. Despite pretty active treatment it grew worse, and he was led to consult me in November.

At this time the leg presented nothing abnormal save in the joint. There was no wasting, no loss of feeling or of electrical reactions. I advised absolute rest, pressure by sponges and bandage, tonics, and moderate doses of iodide of potassium. The joint was hot and largely swollen, the patella lifted by effusion, and the pain severe especially at night. He came back to the city within a month. At this time there was pain and slight tenderness on the right of the eighth and down to the twelfth dorsal vertebra inclusive, an aching sense of distress over which ice caused a feeling of burning. The joint was in all respects better, but still swollen slightly, red, and painful and tender. The thigh and leg presented a curious change. The extensor group in the thigh was wasted at least one-half, the peroneal and gastrocnemial groups were similarly altered, but to a less degree. All of these muscles were much enfeebled, and responded only to galvanic currents of at least thirty cells, and best to ascending currents. The sensibility of the skin of the leg below the knee was much impaired, that above the knee but slightly lessened.

I was amazed to find so remarkable a change in so short a time, and was fortunate in having made previously so complete an examination as to feel sure that when first I saw the case the joint lesion stood alone.

For a few days I enjoined rest, with cut cups thrice to the spine. The local relief was great, and although no other treatment was then employed, a change for the better was seen at once in the joint. After a time I began to treat the knee with powerful galvanic currents, and the muscles with reversed galvanic currents. The most rapid improvement followed, and after thirty sittings I found that I got ready responses by induced currents which were thenceforward used every day. The splints were early laid aside, slight movement permitted, and when only some feebleness of gait remained, I employed hypodermic injections of strychnia.

After three months Mr. B. went home well. He has since had a short relapse, with a display of all the same symptoms in a lesser degree, but the same treatment readily overcame them, and a course of cod-liver oil and iron, with some changes in his ways of work, has sufficed to preserve him in health up to this date.

CASE II.—My second case was a woman, æt. 32, from Wilmington. She was at the head of a busy millinery business, and had been in good health, and free from pain. In the spring of 1873 she began to have pain in the left knee-joint, and after suffering some months, gradually grew more and more feeble as to the use of the left leg. In the autumn she applied to me, and was then in a pitiful state of pain and lameness. The joint was enormously swollen, and very painful, as well as most curiously tender. The temperature was two degrees above that of the right knee, and the patella could be rocked on the distended joint. To my surprise, the whole anterior group of extensors of the leg was wasted at least one-half, and could not be stirred by the will or by any form of current, galvanic or induced, nor yet through the nerve trunks.

The sensibility was, however, unimpaired. The back was free of tender spots, the general health fair, but not vigorous, and there was no functional disturbance of stomach, kidney, or generative organs.

I treated this case as I had done the other, by galvanism until induction currents acted, and thenceforward by these latter. The general treatment consisted in the use of tonics and full doses of strychnia. The gain was sudden and steady, so that I was able, after a few weeks, to leave the case in the hands of my friend Dr. John K. Kane, of Wilmington, under whose charge she continued to improve, so as within a few months to be entirely well.

It is, of course, possible that both of these cases may have been joint troubles originating without neural cause, and producing by reflected irritations muscular losses; or more directly giving rise to an ascending neuritis competent in time to occasion like results. The nerve tracks, however, were searched again and again in both cases for tenderness, and always in vain, while the spinal symptoms of the first case seem to have been distinct, so that, on the whole, I reached the conclusion that in both there was a limited spinal lesion, and if so in both (and here is their peculiarity), the joint disorder came first, and for a time stood alone.[1] The next case as to the spinal birth of which no shadow of doubt can exist, enables us to feel far more sure that the two cases first given had also this origin. It has also this added value, that it was seen and studied by others besides myself, none of whom had finally any other view.

CASE III.—The subject of the following most remarkable history is the wife of a physician of distinction in a neighbouring city—a woman of unusual energy and intelligence, and previously in good health.

On April 18, 1870, she first felt a slight sense of lameness in the left knee. It caused annoyance in going up or down stairs, in sitting or kneeling, far more than in walking. On the 23d an examination revealed

[1] The very remarkable wasting of muscles in some joint diseases, as of the hip, seems to be due to reflected irritations and not to mere inertia, but these wasted muscles usually react under electric currents as well as their healthy fellows.

the presence of too much fluid in the bursa, and on the 24th the joint was distinctly swollen, and there were slight pains at times down the inside of the leg. The knee had gained in one day three-fourths of an inch in girth. So great was the tension and pain, that on the 25th absolute rest was ordered, and leeches were applied. The bleeding continued too long, and seemed to cause unusual feebleness, but on the 26th the inflammation was much lessened. Stimulants were used internally, as she seemed singularly weak, and wet cold was applied locally. A day or two later dry cold was used, and the knee was found to be easy if at rest, but very painful when stirred or even handled.

On May 9th for the first time in trying to move the leg, which by this was much more free of pain, Mrs. B. noticed a want of power to lift the limb, or to change its place from side to side. The extensors, abductors, and adductors were enfeebled.

At this time the leg was put on a gutta percha splint, and kept on it two weeks with compression to the knee by sponges and bandages, while locally iodine was used.

On June 1st Dr. J. H. Brinton asked me to visit Mrs. B. in consultation. At this time there was some pain in the lumbar spine—not a very definitely fixed pain—and there were slight twitches in the thigh muscles above mentioned, and also in the peroneal group—this symptom being worse at night and very disturbing to the patient—as they sometimes moved the patella so as to give pain.

On April 24th the knee measured 14⅓ inches; and during June it continued to be 13 inches. The other measurements will, by and by, be mentioned; they showed at this time remarkable atrophy of the whole limb, but chiefly of the anterior groups of muscles, and there was entire loss of power to lift the leg or even to stir the extensors, or to move the part laterally; yet the joint was vastly better, and indeed quite free from pain, a slight roughness being present when it was bent. The gain took place under use of cod-liver oil, iron, shampooing, and induction currents, which at this time failed to stir the disordered muscles. The temperature of the limb had fallen ever since the loss of power began, but, with the improvement alluded to, the limb throughout became warmer.

July 1. The foot could be rested on the floor with the knee in half flexion, and July 15th could be voluntarily raised from the floor a little, while extended.

17*th*. Mrs. B. was carried out of town, and finally spent the summer at the sea-side, continuing her treatment with daily sea-baths.

During July she walked on crutches, and on August 25th was able without crutches to walk a few steps, though not without limping and pain in the knee. Meanwhile the gain as to temperature, power, and nutrition continued, and the sensibility, never wholly lost, became decisively better.

Sept. 5. I saw her on her return. She could now walk about one-fourth of a mile on crutches.

The measurements were as follows:—

	Over patella.	3 inches above patella.	8 inches above patella.	4 inches below patella.	8 inches below patella.
June 3, 1870.	13	13	16	10½	10½
Sept. 16, 1870.	13¾	14½	17½	11½	11

June 3, 1870. Ankle, 6¾. Sept. 16, 1870. Ankle, 6¾.

During the autumn the improvement went on, and in Nov. Mrs. B. could walk a few yards without aid, but both in the winter and through

the last summer it was curious to see how all of the symptoms fluctuated almost from day to day.

Early in the winter the other knee began to suffer, and precisely the same set of symptoms were seen in the right knee and leg, save that the loss of sensation was not so considerable. I had now, of course, no longer any remainder of doubt as to the spinal origin of this most interesting case.

With varying fortunes Mrs. B. passed through the winter, the joints becoming worse at times and again better, but every new onset of arthritic trouble being followed or accompanied by increase of atrophy, loss of power and sensation, and the limbs being liable to notable alterations in temperature.

June 1, 1871. Mrs. B. saw Dr. Brown-Séquard, to whom I wrote an account of her case. Under his advice she took iodide of ammonia and strychnia in increasing doses, and with these aids and steady sea-bathing became vastly better, and in the fall could walk a mile without aid. The limbs now showed a new increase in size and firmness, sensation was almost perfect, and the joints free of pain. The winter brought, as before, some return of trouble, but not to the same extent as in the last winter.

April 1, 1872. Dr. Brown-Séquard met me in consultation, when, except the use daily of ice rubbing for the knees, no change was made.

The summer of 1872 was spent at Cape May, with the usual good effects. In Oct. Mrs. B. was able to walk about in-doors and out much as other women, all of her untoward symptoms having disappeared. In 1873 she went to Pittsburg to reside, and while there had no further annoyance until Jan. 1873, when she had a most curious and instructive attack of the old symptoms, accompanied with general feebleness, and the appearance of an eruption of herpes, which, originating on the left shoulder under the left arm, passed over the left chest. The eruption was very painful, and lasted about ten days. I did not see her in this attack, but Dr. Benham, her physician, has been so kind as to give me a full description of this incident of the case. Previous to the attack there had been some causes of weakness. The palsy and knee troubles passed away under use of oil and strychnia, and now, except as to power to kneel or stoop readily, Mrs. B. is perfectly well.

In this remarkable history of joint lesions, atrophic palsy preceded by twitching of the muscles, dysæsthesia, and altered thermal conditions, we have all the needed evidence to show that there was a central cause, and that this was a local myelitis of the spinal cord. Its clinical value lies in the fact that the joint disease distinctly preceded the remaining symptoms.

I have met with other examples of spinal disease producing arthropathies, but in all of them the spinal malady existed for long periods before it gave rise to arthritis. These histories, therefore, will teach us nothing new, and I pass on to the last, and perhaps the most remarkable of my cases. In November of last year, Dr. Bolling, of Chestnut Hill, asked me to see with him a case which had been looked upon as mere rheumatism, but which Dr. Bolling had rightly concluded to be of neural origin.

CASE IV.—The patient, Eliza M., æt. eight years. When six years of age, in May, began to complain of pain in both ankles, and to turn the feet under her in walking; braces were applied with no relief to the pain, and they were at length removed. The trouble, nevertheless, grew better, to reappear the following spring, with pain both in the ankles and wrists. Then suddenly the toes swelled at their joints, becoming red, tender, hot, and stiff. Within a few days the ankle-joint also became intensely inflamed, and finally the whole of both feet. Neither the knees nor the hands became inflamed. As the diseased joints grew better, which they did very rapidly during six weeks at the sea-shore, the feet were found to drag in walking, although after a time she became quite well and even active. During each of these attacks, the peroneal and anterior tibial muscles and the interossei of the feet became singularly wasted, and after each onset all of these muscles underwent within a few weeks the most amazingly rapid repair. The hands passed through like changes, but their joints became stiff, and a little rough and enlarged, without any pain, and the interossei, the thenar group, and the extensors exhibited the same speedy wasting, and the same as sudden and remarkable restoration, but in all the attacks this revival left them not quite well nor fully active, so that after each return of disease there was a slight addition to the permanent disability.

As to the latest attack, in November, 1874, I got a better account. The child when seen by me was healthy looking, cheerful, and bright. About November 10th, she began to drag the feet unusually. Then a few days later, she had nausea, and occasionally sick stomach, which endured for a week, whilst meanwhile pain appeared in the leg and in both feet, together with intense pain, heat, redness, and great swelling of all the joints of both feet. The pain was very great, and the tenderness on motion distressing; Dr. Bolling thought that taken alone, no better illustration of acute rheumatism could have been found.

The joints of the hands underwent their usual changes, becoming deformed without pain. When I first saw her in November, the appearances described were lessening in severity, but the atrophies were well marked.

Dec. 10, 1874, Dr. Bolling met the patient at my house, when I made with his aid the following careful notes of her condition. The hands present good types of the "claw hand." The first phalanges are drawn back in extreme extension, the second and third phalanges flexed. The interossei wasted the first most notably. The thumb nails look directly upwards, so as to be on the same plane as those of the fingers, owing to wasting of the whole thenar group of muscles. The palm is flattened. All of the joints are large and stiff. These peculiarities Dr. Bolling tells me nearly altogether disappear between the attacks. The feet are cold, 85° F., bluish and congested. The joints have already lost almost all traces of disease, and are only a little stiff and swollen. The intrinsic muscles of the feet and the flexors of the feet are wasted, but the extensors of the feet, normal as to size, are slightly contracted in tonic spasm. The toe nails are curiously and deeply indented by numerous transverse furrows, probably marking interruptions of growth.

All the foot extensors are palsied, but there is still feeble power to flex and extend the toes, and extend the feet. The interossei of the hand and the extensors of the wrist are very weak, the common extensor of the fingers weak, the flexors all healthy.

Sensation as to touch, pain, localization, and temperature everywhere normal.

The electrical conditions were interesting. A galvanic current (interrupted and reversed) of 60 cells did not move the flexors of the feet, nor was it capable of moving the gastrocnemius which yet responded to volition. Powerful induced currents also provoked in these parts no reaction. Induced currents moved the third, fourth, and fifth interossei of the hands, and best on the right side, but did not stir in either hand the first, second, and third interossei or the thenar group, save only the ulnar adductor, and this feebly. The extensor group in the arms reacted badly under induction currents.

There seemed to be no other muscular loss or defect, and the heart, kidneys, stomach, and special senses were normal.

The symptomatology of this case of course allies it with progressive muscular atrophy, from which, however, it is set apart by most obvious clinical peculiarities.

It is said that an elder sister died of the same disease, and I ought to add that both parents are unusually healthy people.

The last case of my series is in many points different from the others, but more especially in the oddity of the hand symptoms. Apart from this portion of the case, it resembles, save in the acuteness of attack, the three others; but in it the loss of power preceded the arthritic symptoms. In the others there was joint disease of painful character, followed by atrophies, loss of power, and change of temperature, while in one only was there also loss of feeling. In all, the changes were rapid, the cure of the wasting, and palsy speedy and complete.

ART. V.—*On the Palsies of Children.* By WHARTON SINKLER, M.D., Physician to the Orthopædic Hospital and Infirmary for Nervous Diseases, and to the Episcopal Hospital, Philadelphia.

DURING the past four years I have had the opportunity of seeing, at the Infirmary for Nervous Diseases, 140 cases of paralysis in young children. Besides these there were a number of others where the diagnosis was doubtful, or the notes of which were incomplete. I have, therefore, thought it best to omit them. Were these cases included, the total number would be much greater.

The 140 cases are divided as follows:—

"Essential infantile paralysis"	86
Pseudo-hypertrophic "	2
Hemiplegia	23
Rachitic paralysis	6
Facial "	2
Diphtheritic "	2
Congenital "	2
Reflex "	2
Syphilitic "	2
Traumatic cerebellar paralysis	1
Paralysis following spinal meningitis	5
" " cerebral meningitis	3
" " cerebro-spinal meningitis	1
" " myelitis	3
	140

I do not propose to go into any scientific discussion in regard to the etiology and pathology of the various forms of paralysis above mentioned. I shall simply give the practical points as to diagnosis, treatment, etc., as they presented themselves in the cases at Dr. Weir Mitchell's and my own clinics.

The so-called essential infantile palsies being the most numerous and the most important, I shall consider them first.

Many names have been given to this form of paralysis, Rilliet and Barthez, Niemeyer and others, calling it the essential paralysis of infancy. Hammond terms it organic infantile paralysis; and Meigs and Pepper, modifying the name given it by Duchenne, of fatty atrophic paralysis, call it atrophic infantile paralysis.

As will be seen by reference to the text-books, infantile paralysis has been recognized since the end of the last century, but it is only within a few years that it has been fully understood and separated from the other forms of paralysis met with in children. Indeed, even some recent writers have failed to make the distinction. West, in his table of 43 cases, has recorded several instances of facial paralysis, and a number of hemiplegias of cerebral origin; and Meigs and Pepper have referred to these very cases as examples of the disease under consideration. It is by no means an easy matter to diagnosticate infantile paralysis, for although the symptoms are generally distinctive, cases often occur which resemble the disease in many particulars, but in other important features differ.

I shall briefly recall the well-known characteristics of this disease.

The affection generally occurs in a strong, healthy child, between six months and two and a half years old. The patient may have had fever, usually in the latter part of the day, accompanied by vomiting during the night, or for twenty-four or forty-eight hours preceding, and in the morning is found to be paralyzed in one or more limbs. Or the loss of power comes on suddenly without any sickness having been noticed. Occasion-

ally it occurs in the course of, or as a sequel of measles, scarlatina, or hooping-cough. If both upper and lower extremities are affected, the former soon recover power, often by the end of a week. The paralysis in one or both legs persists, or slowly mends, and it is six months or a year before the child begins to walk again. There are usually no convulsions or loss of consciousness; nor is there paralysis of the bladder and rectum. In most cases there is more or less soreness to touch, or pain in the back on movement, and for several days the little patient will cry out when lifted. There is no loss of sensation. The palsied limbs soon begin to waste, and as the sound limbs grow they become larger and longer than the affected members. In some this difference in size is very great, the paralyzed limb seeming almost rudimentary. Even where the length of the limb rests unaltered, we sometimes find that the foot or hand of the diseased side is shortened.

If the patient is seen six months or a year after the attack, the affected limbs are found cold, shrunken, and atrophied. There is a mottled appearance of the skin, which seems adherent to the subcutaneous cellular tissue. On pinching up a fold of the skin it does not seem loose, as in the healthy limbs, but seems to cling to the deeper structures.

The loss of power is more or less complete; sometimes it is only a single group of muscles that is palsied. Should the whole limb be affected, it is relaxed and limp, the ligaments of the joints being also lengthened. There is never any contraction of the muscles as is seen in cerebral palsies. There is often shortening of some muscles in a limb, producing deformity; but this is quite different from the contractions just mentioned, being a true shortening of the muscle, owing to the position which the limb has assumed, or from the muscle acting while its opponent is palsied, and not a spasm of the muscles, which can be overcome by force, or which at times relaxes spontaneously. Adams (*Club Foot*, p. 83) refers to this shortening of the muscle as the "adapted atrophy of Paget," and expresses his own belief that there is no active contraction of the muscle. According to Duchenne, electro-muscular contractility to the induced current is not affected in the paralyzed limbs during the first few days, but afterwards they rapidly lose the power of responding to this current. Galvanism, however, continues to cause good muscular response even when faradism fails to produce the faintest movement.

The following is a well-marked example of infantile palsy:—

Joseph R. L., aged four years, was brought to my clinic November 18, 1874. Only child; father died of kidney disease, but mother is living and healthy; is a robust, healthy-looking boy, with light hair, blue eyes, and sound teeth. When fifteen months old he was walking and in good health, except that he was teething. One day in July he was seized with vomiting and fever, which lasted three or four days; at the end of that time he was found to be completely paralyzed in both legs. He had no convulsion, and there was no loss of power in the bladder or rectum.

During the time that the fever lasted he seemed to be unconscious, but screamed when lifted or handled. In two weeks the right leg regained entire strength, but the left did not improve, and for a month he was weak and feeble.

Present State.—There is no difference in the length of the legs, but the left foot is one-quarter inch shorter than the right. The right leg is strong and well developed, the left is small, flabby, and cold. There is absolute loss of power in all the muscles from the hip down, except in the flexors of the leg, in which there is slight movement. He can walk without assistance, but the leg is simply swung around, and when he bears any weight upon it there is great recurvation of the knee. The measurements of the leg are as follows:—

Left leg,	3	inches above the knee,	8½	inches in circumference.	
Right "	3	" "	10	"	"
Left "	2	inches below the knee,	6¾	"	"
Right "	2	" "	8	"	"

Temperature of the sole of the left foot, 69°
" " " right " 73°
" " calf of the left leg, 74°
" " " right leg, 84°

These temperatures were taken in a room where the thermometer stood at 70°.

The muscles of the left leg give no response to a strong induced current, but fifty cells of the galvanic battery produce good contractions of the paralyzed muscles.

From the difference in mode of onset of the affection, Dr. Mary Putnam Jacobi[1] has divided the cases into several classes. The first class is where the disease comes on suddenly, without premonitory symptoms, and where the child is under competent observation. Of such Dr. Jacobi found but twelve of one hundred and sixty-three cases she had collected. There are six instances in my table.

The second class is where the paralysis is discovered in the morning after a quiet night. Six of our cases have this history. Among these may be included three cases in which the paralysis came on between morning and evening without any apparent sickness, the actual onset not having been observed.

The third form is, in my experience, the most common. It includes those cases in which the palsy has been preceded by fever, "beginning in the evening and lasting all night, or else for two or three days."

There is also nearly always vomiting or nausea, and some pain on being moved. These latter symptoms are not mentioned by Dr. Jacobi, but other authors speak of them as being common. Thirty-four cases in my table are of this nature.

In the fourth class the paralysis is preceded by convulsions. Dr. Jacobi found four out of thirty-seven cases which she examined in reference to this point. In but three of our eighty-six cases did it occur, and there was one in which fits followed the loss of power.

[1] American Journal of Obstetrics, June, 1874.

In the fifth form the paralysis comes on in the course of a convalescence from another disease. Eleven of our cases were of this class, and I have not included two or three in which the palsy came on in the course of hooping-cough, for they were accompanied by the usual symptoms, and the complication of hooping-cough seems to have been accidental.

A sixth class is made by the author already quoted, where vomiting alone precedes the palsy. I do not think this can be made a distinct class, for it is most probable that in these cases the fever has been overlooked by the parents, who are often unobservant. In three of our cases it was stated that there had been vomiting without fever.

A seventh form is where "some mechanical injury has occurred." I must take exception also to this decision, for there is no proof that a fall which the child has sustained a week or perhaps a month before the paralysis, can be regarded as the cause of it. In several of our cases was there an account of a fall, which had taken place days or weeks before the palsy occurred, and which had caused no pain or difficulty in walking at the time. In only one instance was the paralysis said to have immediately followed the injury, and here the history was not to be taken as reliable, for the patient was not seen until fourteen years afterward.

In the eighth form the symptoms are markedly spinal in their character. There is opisthotonos, hyperæsthesia, and bladder trouble. Five of our eighty-six cases belong to this class. In none of them, however, was there any paralysis of the bladder. Dr. Jacobi gives a case of this kind in which there was retention of urine for eight days, and insensibility to the prick of a pin for two days, and very justly remarks that this case resembles lumbar myelitis, and I think it is not entitled to be recorded as a case of infantile paralysis.

The ninth class of this author really belongs to the cerebral palsies.

I shall make another class, in which the loss of power comes on gradually, without previous fever or sickness being observed. Three of our cases were of this nature.

One, a child, at the age of thirteen months, was strong and healthy, and running about. One evening his mother noticed that in standing on her lap his legs gave way under him. He had seemed as well as ever during the day. That night he did not move about in bed as much as usual. The next day he walked about, but was rather unsteady upon his legs. The day following, when he was put in his cradle, he began to scream violently, and it was then found that he was palsied in all of his extremities. For some days he had "screaming spells," but did not become unconscious, and his mother thinks he had no fever. In three weeks he began to use his arms. When seen at the Infirmary for Nervous Diseases, at the age of two and a half years, there was loss of power in both legs below the knee, and pes equinus on both sides.

The cause of infantile paralysis is acknowledged by all writers to be obscure. Sex seems to have no influence on the affection. Of the eighty-

six cases which came under my observation, forty-two were males and forty-four females. Vogel[1] says that more boys than girls are affected.

The disease, as I have already stated, is most likely to occur between the ages of six months and three years. Of our cases but three were paralyzed at six months and under. Between six months and one year there were nine cases. At one year and under two there were forty-one cases. At two years and under three the affection occurred in twenty instances. At three years and under four there were seven cases. From four to five there were three cases. From five to six it occurred only twice; and from six to seven there was but one case. We therefore see that between six months and three years seventy of the eighty-six cases were palsied.

Adams remarks that the occurrence of the palsy seems to be connected with the first dentition. There certainly is at this time an extreme degree of susceptibility to impressions in the nervous system. It is in the "second summer," however, that most of these cases of infantile paralysis occur. This period is well known as a most trying season for children in this country, and it is then that so many die of convulsions, "summer complaint," and marasmus.

I observed, two or three years ago, that many of our cases of infantile palsy were said to have been attacked in the summer months, and since then I have carefully noted the time of year when the paralysis came on in each patient. In fifty-seven of the eighty-six cases in which this point is recorded, I found that two cases occurred in March, one in April, one in May, eight in June, eleven in July, nine in August. In twelve instances it was simply stated that the child became paralyzed in the summer. Six cases were in September, five in October, one in December, and one in the fall. This shows that forty of the fifty-seven cases were affected in the summer months; and if we add the seven which took place in May and September, which are generally hot months in this city, we find that all but ten of the fifty-seven cases occurred in hot weather.

This fact has not, to my knowledge, been remarked before, and seems to me to have much bearing upon the causation of the disease. At any rate, it is evident that hot weather must have a marked influence in predisposing to the affection.

Dr. G. S. Gerhard, in a paper on chorea, in the *Phila. Med. Times*, Feb. 3, 1874, has remarked that that disorder is more liable to occur in the spring than at any other season.

Nothing is known of the exciting cause. West[2] mentions two instances in which paralysis of the leg seemed to follow sitting on a cold stone step. Niemeyer justly remarks that this idea "is unworthy of attention, as innumerable children sit daily upon the stones, while essential palsy is not a common disease."

[1] Diseases of Children. [2] Diseases of Children, p. 199.

In some cases one of the exanthems seems to have been the exciting cause, but in others absolutely none can be detected.

As to the frequency with which the various parts are affected, of our eighty-six cases, when first seized, in twenty-three both legs alone were palsied, in fourteen the right leg alone, in thirteen the left leg, and in two the left arm alone, in twenty-two instances all the limbs were paralyzed, in four the right arm and both legs, in four the left arm and left leg, and in four the right arm and right leg. I may here remark that Niemeyer[1] asserts that in this disorder we never find both extremities on the same side of the body paralyzed. These statistics disprove the statement, for although, in some of the eight cases in which the arm and leg on the same side were affected, the parents may have been mistaken, in one of them the child was seen by me in less than a week after the onset of the palsy, and it was clearly limited to the members of one side.

In fifteen of our cases both legs were affected at the time the patients were brought to the clinic. In twenty-nine the right, and in thirty-three the left leg was paralyzed. In one case the left thigh alone, in three instances the left, and in one the right arm alone, in two the right arm and both legs, in one the right hand and both legs, and in one the right arm and right leg were palsied.

Of fifty-nine cases examined in reference to deformity of the feet, in twenty-five there was none. In seven there was valgus, in twelve equinus, in eight varus, in four equino-varus, in one equino-varus of one foot, and calcaneo-valgus of the other, in one valgus of one and equinus of the other foot, and in one contraction of the plantar fascia.

Mr. Adams (*loc. cit.*) gives the following order of frequency in which groups of muscles are affected: 1. The muscles of the anterior part of the leg forming the extensors of the toes and flexors of the foot. 2. The extensors and supinators of the hand, these muscles being always affected together. 3. The extensors of the leg, and with them generally the muscles of the foot as in the first group. When single muscles are affected the most likely to suffer are these: (*a*) The extensor longus digitorum of the toes. (*b*) The tibialis anticus. (*c*) The deltoid; and (*d*) The sterno-mastoid. I suppose the author refers to the cases as they presented themselves to him some time after the palsy, for it is very rare for a single muscle, or group of muscles, to be paralyzed from the first. Generally the whole of one or more limb is affected at the onset, and recovery may then take place in all but one muscle or a group. In only one of our cases did a single group of muscles seem to have been palsied from the beginning.

The temperature of the affected parts is always much depressed. In one of my cases there was a difference of six degrees in the temperature of the two legs, and in another ten degrees.

[1] Text Book Practical Medicine, vol. ii. p. 339.

The palsied limb, failing to grow with the same rapidity as the sound member, soon becomes smaller, and this arrest of growth takes place in the foot as well as in the leg. This fact is not spoken of in any of the text-books which I have consulted, and my attention was first called to it by Dr. Mitchell at one of his clinics. The difference in the length of the feet is almost always present, and is important as a diagnostic feature.

In one of our cases, a man, who was seen at the age of forty, there was two inches difference in the length of the feet.

There has been the greatest difference of opinion as to the morbid anatomy of the disease; one set of writers holding that the affection is wholly peripheral, and without any organic change in the nerve centres, while others claim that there is a true lesion of the spinal cord. At the present day those holding the latter view are by far the most numerous, and there has been a sufficient number of post-mortem examinations made in which spinal lesions have been discovered to sustain them in their belief.

Dr. Jacobi, in the paper already quoted, has collected twenty-six autopsies in cases of infantile paralysis, by far the greatest number that have been yet reported. Of these there are but seven cases in which negative results were obtained, and in three of these no microscopic examination was made. In the remaining nineteen cases in which lesions were found in the cord, the morbid changes were of various characters, from congestion of or hemorrhage into the cord, to microscopic alterations in the nerve cells of the antero-lateral columns. Besides these cases I may add three more autopsies which were reported by Dr. R. M. Bertolet in a paper read before the Pathological Society of Philadelphia, and published in the *Phila. Med. Times* for Nov. 7, 1874. In each of these cases there were found "profound alterations in a great number of the motor cells and disappearance of others."

In addition to the changes in the nerve cells there has frequently been found sclerosis of the antero-lateral columns.

The researches of Lockhart Clarke, and Charcot indicate that it is in the cells of the anterior cornua of the cord that we must look for the most constant changes in this disease.

The suddenness of the paralysis would seem to indicate congestion or hemorrhage, and these theories have been advocated by able writers, the first by Brown-Séquard and Radcliffe, and the latter by Clifford Albutt. Mr. Adams (*loc. cit.*) says "it appears probable that local congestion of the nerve-centres or nerve-trunks, accompanied in some instances with effusion, which subsequently becomes absorbed, are the only lesions in many of the slight cases."

I must acknowledge to having had a strong leaning to the congestive view, but there are many points of dissimilarity between the phenomena of spinal congestion and infantile paralysis. These are given at length

and in tabular form by Barwell.[1] Moreover, it seems to have been demonstrated by recent writers that the nerve-cells of the cord are capable of undergoing changes, which at first may be functional, but may terminate in organic lesions of the medulla.

Hillier, writing in 1868, before the more modern discoveries of changes in the motor nerve cells of the cord were made known, says: "The atrophic paralysis of infancy may be regarded as, in all probability, an affection of the spinal cord, and especially the anterior and part of the lateral columns." And there is no reason for us at the present day to dissent from this opinion.

Besides the changes in the cord there are important alterations in the paralyzed muscles themselves. These consist in fatty degeneration, with disappearance of the muscular fibres. Hammond[2] denies that this degeneration takes place in every case of infantile palsy, and relates two instances in which the disease had lasted over four years, and in which he had found the muscular structure unchanged.

Prognosis.—The result of our experience at the Infirmary for Nervous Diseases is that this depends upon the length of time that the patient has been palsied when seen. If a child is brought to us within a few weeks after the onset of the paralysis, we feel justified in giving a partially favourable prognosis; but if the disease has lasted months and even years, it is useless, in the majority of cases, to expect to restore power to the paralyzed muscles. These are atrophied to an extreme degree, and have undergone such extensive fatty degeneration that but few muscular fibres remain. Under these circumstances how can we hope for any restoration of muscular power? The prognosis as to usefulness of the lower extremities, however, may almost always be favourable, for by proper treatment the limb may be strengthened, and, with the aid of suitable apparatus, the patient can be enabled to walk.

The following case is an illustration of the good results that may follow treatment in a case of long standing, in which we might have anticipated fatty degeneration of the palsied muscles. So we should be careful in forming our opinion even as to return of muscular power in cases of long duration.

The patient, a little girl of 5½ years, was brought to one of my clinics fifteen months after having been paralyzed. She had been perfectly well until four years of age. One evening while riding in a carriage she complained of pain in the back and head. That night she was feverish, and the following morning there was found to have occurred paralysis of the left arm and leg. The loss of power was not complete, but she was utterly unable to walk or even to stand. The arm regained power rapidly, but it was three months before the leg was strong enough for her to walk even with a crutch. Up to six months ago the leg gained power steadily

[1] St. Thomas's Hospital Reports, N. S., vol. i. p. 201.

[2] Diseases of the Nervous System, p. 695.

until she was able to walk with a cane, but since that time no improvement has taken place.

Sept. 22, 1872. The child has no power in the flexors of the left thigh. The abductors lift it slightly upwards and forwards. She cannot flex or extend the left leg, but can flex and extend the foot and toes. There is atrophy of the thigh and calf, but no difference in the length of the legs. The left foot, however, is a quarter of an inch shorter than the right, and is cold.

A strong induced current does not move any of the muscles of the left leg except the anterior tibial group, and the interossei of the foot. The galvanic current moves all of the muscles. There is some loss of electro-muscular sensibility. Ordered faradization of the leg three times a week.

Oct. 11. The patient has had treatment, as directed, with regularity, and there is great gain. She is able to lift the thigh somewhat, and to flex the leg. The temperature of the foot is better. All of the thigh muscles now respond to the primary induced current, but the soleus and gastrocnemius do not. The same treatment was continued, and in addition daily shampooing of the leg was ordered.

30*th*. Improvement continued in every respect. Patient walks better and has more of the leg movements. After this date her parents ceased to bring her to the clinic, as they lived a long distance from the city.

In this case it would seem as if the paralyzed muscles had recovered their tone, but could not be brought under the control of the will until electricity had brought them again into action.

Another point of interest in the case is the fact that the foot muscles were intact, while those of the leg and thigh were paralyzed. Vogel[1] asserts that "paralysis of the arm, without involving the muscles of the fingers or hand, occasionally occurs, but the reverse of this condition has never, to his knowledge, been observed."

Diagnosis.—Although I take it for granted that all of my readers are well acquainted with this disease, I would suggest a few points of importance in its diagnosis.

First of all, the paralysis occurring in a child previously healthy after slight indisposition and feverishness, and there being no convulsion or loss of consciousness.

The excellent state of the general health in this affection is very striking.

Almost all of the children who are brought to our clinics at the Infirmary for Nervous Diseases, suffering from infantile palsy, are remarkable for their fine, healthy appearance, whereas those with cerebral paralysis are rachitic or scrofulous in the majority of cases.

There is no paralysis of the bladder and rectum. In but one of our cases was there any urinary difficulty, and in but one want of control over the contents of the rectum.

The electrical condition of the muscles has always changed. There is always failure to respond to the faradic current to a greater or less extent.

[1] Diseases of Children, p. 392.

This is a most important diagnostic feature, for in the cerebral palsies there is no alteration in electro-muscular contractility.

The fact that the paralysis has occurred in hot weather, or in the course of, or convalescence from measles, scarlatina, smallpox or typhoid fever, should also be considered as bearing on the diagnosis.

Treatment.—This depends, of course, upon whether the case is recent or of long duration. If the patient is seen immediately, or within a few days after the attack, leeching or counter-irritation to the spine may be used, especially in those cases where there is spinal pain or tenderness. Iodide of potassium may be administered with advantage. If the child is teething, and the gums are swollen, lancing them is indicated. In one of my cases incising the gums seemed to be of service.

The patient was brought to one of my clinics within a week after an attack of paralysis of the left arm and leg. She was fourteen months old, and had been walking.

Seven of the incisors and one molar had been cut, and another molar was pressing up the gum. The gums were freely lanced, and iodide and bromide of potassium were ordered. After taking but one dose of the medicine a lumbricoid was passed, and a few doses of calomel and santonine were therefore given, with the effect of expelling two more worms.

After two or three weeks electricity and shampooing were employed.

The improvement was quite rapid, and in two months the patient could move both arm and leg freely.

When the paralysis is of some duration electricity in the form of galvanism is a most useful agent in its treatment. Duchenne has found faradization of value, but experience has shown that the form of electricity which is of the most service is that which causes muscular contraction in the paralyzed limb. In this disease a slowly interrupted galvanic current of moderate intensity will move muscles which are not stirred by the strongest faradic battery.

Shampooing and manipulating the palsied limbs are of the greatest value. By these means the shortened muscles are relaxed, the adherent integument is loosened, and the nutrition of the whole limb is improved. The degree to which the temperature is elevated by manipulation, is evidence of its usefulness.

In order to test the relative power of galvanism and manipulation to increase the warmth of a limb, I took the temperature in a case of paralysis of the arm in a child three years of age. The difference between the palms of the two hands was 5°. Galvanism elevated the temperature but 1½°, while by manipulation the temperature in the palm of the hand was raised 8°, and in the bend of the elbow 10°.

The manipulation referred to should be done by one who understands the method; but any intelligent person can readily be instructed in its application. It consists in friction of the surface of the limb and kneading of the muscles.

It has often been observed that when the paralyzed limb is warm the patient has much more power to move it than when it is cold. This fact suggests a point in treatment, namely, the application of heat to the affected parts. This may be done either by immersing the limb in hot water before manipulation or by subjecting it to dry heat. A good plan is to have the arm or leg held before a hot fire for a few minutes every evening.

Strychnia is always serviceable in these cases, but I have never seen striking results from its use. Barwell[1] gives some cases in which remarkably beneficial effects followed the hypodermic use of this agent. I tried it faithfully in two cases, but without the least benefit. One of the patients was under treatment for a long time, but the other had only six or eight injections of the strychnia.

Apparatus should be used to correct deformities, and to enable the patient to use an otherwise helpless member. The appliances should be of the lightest possible character, and made to avoid interference with the movements of the limb.

One thing of the most extreme importance, and which should be impressed upon the parents of the child from the beginning, is, that the means which are to be used will have to be employed for a length of time, and that it is needless to treat a case only for a short period.

In some of our cases, which seemed to be of the most unfavourable character on being admitted to the wards, the greatest improvement has taken place from using daily treatment by the means referred to for long periods, and, in addition, applying suitable apparatus. Children who have been admitted entirely unable to stand, have, after several months' treatment, been discharged, walking readily with the aid of apparatus.

We use at the hospital a wheel-crutch, which enables the patient to exercise the legs even when he cannot stand. The arrangement is made so as to support the body under the arms, or, if necessary, by the perineum also, and is very light and easily moved. Some contrivance of this kind is essential in the treatment of these cases.

I regret greatly being unable to furnish any statistics as to the results of treatment in our cases; but all who have had experience in dispensary practice know how impossible it is to induce patients to attend with regularity for any length of time.

Cerebral Hemiplegia.—Of the twenty-three cases of this disease, ten were males and thirteen females. Twelve were left, and ten right hemiplegia; and in one instance the left arm alone was said to have been paralyzed. It is probable that in this case also there was complete hemiplegia at the beginning, which was not observed.

The age at which the attack occurred was from three months to eight

[1] Lancet, 1872.

years. In three instances the hemiplegia was apparently the result of the use of the forceps in delivery; and in two other cases it was congenital, and due probably to some defect in cerebral development.

In these cases, almost all being seen at remote periods from the attack, it was difficult to determine the exact cause of the paralysis. In many it was most likely that cerebral hemorrhage had been the lesion, and in two instances, one of which occurred in the course of scarlatina, and one some months after that disease, the hemiplegia was evidently the result of embolism. Four of the patients had been subject to fits, and, after a severe convulsion, the paralysis of one side had been observed. In most of them there had been feeble health, or some predisposition to cerebral disease, such as rickets or hydrocephalus.

In one case it was difficult to determine if the hemiplegia was due to hemorrhage, the result of an injury to the head, or to inherited syphilis:—

The patient came to my clinic August 10, 1874. She was seven years of age, and had always been healthy. There were five brothers and sisters, all older, who were also healthy. The mother had been treated by Dr. W. S. Stewart, who sent the child to the hospital, for secondary syphilis. Four weeks ago the patient fell against the corner of a marble door-step and received a deep wound over the right eyebrow, the scar of which remains. She was not insensible at the time, but has complained of pain in that location ever since. Two weeks ago her mother noticed that the face was drawn to the right side, and that there was slight loss of power in the left arm. She still walked well, however. She now lost appetite, and the voice was not as clear as usual. In a day or two the leg became weak, and in two days more the foot was dragged to a marked degree, but the leg never lost power completely. The arm has been steadily growing worse.

Present state.—Patient walks with but little difficulty, although the leg is weak. The left arm is completely powerless, except slight ability to elevate the arm. The left side of the face is paralyzed, but there is no ptosis or squint, and the tongue is protruded straight. Over the right eye there is a scar about a half inch long, but there is no depression in the bone, and pressure over it causes no pain. For the last few days there has been some nausea and vomiting. There is no cardiac disease.

Eye-ground.—Veins of right fundus are larger than those of left, but otherwise the disk is normal. Sensation unimpaired. All the muscles respond to a mild induced current. Ordered potass. iodid. gr. ij t. d.

August 17. Improving, but fingers of left hand are disposed to contract.

26*th*. Has quite good movement of the arm, but fingers are contracting more. The leg has entirely recovered.

In this case it would look as if the injury to the head had been the cause of the paralysis, but it is difficult to conceive how hemorrhage can have gone on for two weeks without producing any symptom but headache. On the other hand, if the lesion was syphilitic, *e. g.* a gummy tumour, why was there no greater disturbance of the eye-ground, and why had there been absolutely no previous indication of the disease? And also, if we would account for the improvement which took place under

the use of iodide of potassium, on the supposition that there had been a syphilitic growth which was absorbed by the remedy, why did the contractions of the flexors of the fingers increase instead of diminishing?

In all of the cases there was well-marked contraction of the flexors of the paralyzed limb, and no loss of electro-muscular contractility; and from these facts we may clearly locate the lesion in the brain.

A notable feature in these cases of cerebral hemiplegia is the retardation of growth in the paralyzed limbs. This was observed in all of our cases which were seen long enough after the attack for any change to have taken place. In the case of a girl who had been paralyzed at one year, when she came to Dr. Mitchell's clinic at the age of seventeen, the left arm was two and a quarter inches shorter than the right. The left leg was one and a quarter inch shorter, and the foot one and a half inch shorter than the other. Complete restoration of muscular power had taken place, except slight rigidity in the flexors of the arm from contraction.

Electro-muscular contractility to the induced current was perfect. The patient was said to have had water on the brain in infancy. After a sickness of four weeks she had a slight convulsion, followed by insensibility for several hours. On recovering consciousness there was found to be left hemiplegia. In only two of the right and one of the left hemiplegias was there any difficulty in speech. In two or three of the cases there was decided mental deficiency.

The fact that in childhood hemiplegia may give rise to excessive wasting and to check of growth in the length of the limb was first noticed and commented on at our clinic two or three years ago by Dr. Mitchell. It marks a singular difference between the hemiplegias of adult life and of childhood.

Rachitic Paralysis.—This condition is described by several writers as pseudo-paralysis, and is said never to be complete. Under the head of hemiplegia I have included a well-marked case of rickets, in which there was left hemiplegia, with contraction of the flexors of the arm and absolute loss of power in the forearm. Besides the enlargement of the epiphyses there was a large "soft spot" in the skull at the parietal protuberance.

Of our six cases, two were males and four females, and the age at which they were seen varied from twenty-nine months to six years. In all of the cases there were decided evidences of the rachitic diathesis, and the want of muscular power had always been present from early infancy.

Hillier[1] says, there is sometimes in rickets great want of muscular power, simulating paralysis, and this symptom may be quite disproportionate to the signs of rickets in the bones or elsewhere. The gradual

[1] Loc. cit., p. 266.

accession of muscular weakness, the other marks of rickets, especially in the bones, and the diffused and at the same time incomplete character of the paralysis, should prevent one from mistaking such a case for infantile paralysis.

The following case well illustrates the characters of this affection :—

Florence B., æt. 3 years, was brought to my clinic April 22, 1873. She is one of seven children, and is small for her age. The next oldest child has very much bowed legs.

At the age of three months she had "cholera infantum," which lasted all summer, and she was greatly reduced thereby.

Present state.—Has all of her teeth, which are well preserved except the incisors, which are decayed. The anterior fontanelle is still unclosed. The epiphyses of the radii are enlarged, the ribs are beaded, and the tibiæ are bent. The legs are small and flabby, especially below the knee, and the ligaments are much relaxed. The body is immensely fat. The patient has every movement of the legs, and can stand with assistance, but when the aid is withdrawn she falls immediately.

She moves from place to place in the sitting position, using the feet and hands in locomotion. Her general health good, and she sleeps well.

Electro-muscular contractility fair. She was admitted to the hospital, and ordered cod-liver oil f℥j t. d. and syr. calcis lacto-phosph. f℥j t. d. The legs were to be manipulated and faradized alternate days. At the end of three months she walked unaided very well. She was then sent to the Children's Hospital at the sea-shore, and became strong and active by the end of the season.

Dr. Parry,[1] in the *post-mortem* examination of a rachitic child who had suffered from pseudo-paralysis, and who had died at four years old, found the spinal cord, brain, and nerves quite healthy, although the muscles of the leg were pale and flabby.

Pseudo-Hypertrophic Paralysis.—That this is a rare affection is shown by the fact that we have met with but two instances of it at the Infirmary for Nervous Diseases, and in one of these the diagnosis was somewhat doubtful, for the patient was seen only during the early stage of the disease. The other case was reported at length by Dr. Weir Mitchell in the *Photographic Review of Medicine and Surgery*, vol. ii. p. 1.

I will give a *résumé* of this patient's history.

Robert P., æt. 8, applied at Dr. Mitchell's clinic September 12, 1871. Mother died of cancer, and the father has been treated by Dr. Duhring for a tubercular syphilide. Brothers and sisters healthy. When he began to walk his gait was unsteady, and it has grown worse; is a stout healthy-looking boy, with a rather ruddy complexion; height, 3 feet 9 inches; weight, 45 pounds; has never had fits or any illness. On being stripped the following appearances are presented. There is an anterior curvature of the spine in the lumbo-dorsal region. Abdomen is large and prominent, circumference of waist 20½ inches. The spinal curvature is owing to the position assumed by the patient in order to keep his equilibrium; arms and hands normal, but the lower limbs are enormously developed from the groins down. The skin of the extremities is mottled.

[1] Am. Journ. Med. Sci., Jan. 1872, p. 51.

Largest circumference of left thigh, 13 inches.
" " " right " 12⅜ "
" " " left calf, 10⅜ "
" " " right " 9⅞ "

When asked to lie down he throws himself forwards on his hands, then "falls into a heap." To raise himself he first gets on elbows and then on hands, next by successive efforts he draws feet up under the pelvis, then straightening up he climbs his own legs with one hand on each thigh, and at last with effort balances himself upright. Walks plumping his feet down and rolling his body from side to side. There is no loss of electro-muscular contractility or sensibility. Urine normal.

On April 23, 1872, seven months later, the following notes were taken:—

Circumference of right thigh, 15⅞ inches.
" " left " 15⅝ "
" " right calf, 11¼ "
" " left " 11½ "

These measurements show a great increase in the size of the legs. The arms have also increased, but not in the same proportion. The muscles have all acquired greater hardness. The thighs are more mottled, and there is a rose-coloured eruption on the neck and chest, which fades when exposed to the air. He can no longer get up unaided from the floor.

The patient was last heard of about a year ago, and the loss of power continued to increase.

Facial Paralysis.—We met with but two instances of this out of the 140 cases. One was in an infant of eight months, and was the result of scrofulous abscesses of the ear and neck. The other was in a girl of about nine. The paralysis occurred in infancy, and was not traceable to any cause. There was absolute loss of power in all of the muscles of the right side of the face, which are fed by the seventh nerve, and there was considerable atrophy. All of the muscles responded readily to the induced current, showing the peripheral character of the palsy. A long course of faradization failed to improve the condition of the facial muscles.

The two cases of *Diphtheritic Paralysis* presented no unusual features, and were relieved speedily by faradization and manipulation.

Of the two cases which I have called *Congenital Paralysis*, one was a child seen at the age of three years, and in whom there was complete palsy of the right arm.

The mother stated that at birth the right arm was shrunken, and not more than one-half the size of the left. The child was delivered by the forceps, but it is not likely that these were the cause of the paralysis, for there was no sign of external injury, and when the patient was seen by me, there was no contraction of the flexors in the affected limb. Moreover, the paralysis and atrophy were evidently from one and the same cause.

The muscles of the right arm all were easily moved by the faradic current, and by the use of this agent there was great gain in power.

The other case was one of paralysis of the right leg which had existed from birth.

Reflex Paralysis.—One of the cases was a girl of three years, and the palsy was apparently excited by an attack of pneumonia. There was incomplete paraplegia, and the child cried violently whenever put on its feet. There was also bad prolapse of the lower bowel and constant straining at stool. Dr. Mitchell prescribed liq. morphiæ sulph. gtt. xij t. d., and under its influence the child rapidly recovered.

The paraplegia in the other case was probably due to phimosis. Circumcision was recommended, but I do not know if my advice was followed.

Syphilitic Paralysis.—One of these cases is of so much interest that I will transcribe it from our note-books in full.

A. M., æt. 22 months; when six weeks old slept for five days and nights, and on arousing was found paralyzed in the whole right side. The face was not affected, but the head was drawn to the right side. There was never complete loss of power in the arm. The patient gradually regained power and became able to walk. Two weeks before coming to the clinic he lost power to walk.

Condition when seen April 4, 1871. There is no difference in the length of the legs, but the right is shrunken and the right foot is three quarters of an inch shorter than the other, and the soles of both feet are dry and shrivelled. There are two tumours the size of a buck-shot in the right popliteal space, and one in the soleus muscle as large as a walnut. There are many other such growths scattered over the body. On the legs is a copper-coloured eruption, and the teeth are decaying around the roots. The general appearance of the child is that of good health. He is quite unable to stand. Under the belief that the tumours were syphilitic gummata, and that the paralysis was caused by a tumour or some syphilitic degeneration of the cord, Dr. Mitchell prescribed iodide potassium, gr. iij t. d.

On April 8, just four days later, the patient returns wonderfully improved. He is able to stand alone, and the tumours are lessened in size.

One month later he was able to walk a little, and by July 11 he walked well, and the tumours had disappeared entirely.

In the other case, a child of two years, there was left hemiplegia with contractions. The child also had fits. The mother presented unmistakable evidences of secondary syphilis. Under the use of the iodide and bromide of potassium combined, the fits were greatly diminished in frequency, and power returned to such an extent that the little patient began to walk.

Spinal Meningitis.—Three of the five cases were idiopathic and were characterized by opisthotonos, violent dorsal pain and hyperæsthesia followed by paralysis of the limbs, and in one case there was paralysis of the bladder. The other two cases were the consequence of caries of the spine, and were more or less associated with myelitis.

Myelitis.—In all three cases of this affection there was caries of the spine.

In one of them, a patient of Dr. Mitchell's, a girl of eleven years, with great antero-posterior curvature of the spine, there was total loss of power in both lower extremities. Moving the legs caused sudden spasm of the anterior crural group of muscles. The muscular spasm could also be produced by the prick of a pin. Sensibility was lessened in the foot, and

there was slight analgesia. The muscles responded excessively to faradism and not at all to the galvanic current.

The patient was admitted and placed at complete rest in bed. Leeches were applied to the spine twice a week, and cod-liver oil administered. Electricity was also ordered. Under this treatment the patient improved with astonishing rapidity, and in a month could move the legs freely. At the end of three months she walked about unaided.

Cerebral Meningitis.—In one of these cases there was hydrocephalus. The fronto-occipital diameter of the head was 22½ inches and the bi-parietal nine inches. The child was twenty-two months of age when brought to my clinic. She talked and was intelligent, but was cross and slept badly. There was general loss of power, the child being unable even to sit up.

In another there had been all the symptoms of an acute attack of meningitis, and when seen there was general muscular enfeeblement without absolute palsy.

ART. VI.—*On Syphilitic Affections of the Lachrymal Apparatus, with Observations upon a Peculiar Syphilitic Lesion of the Caruncles.* By R. W. TAYLOR, M.D., Surgeon to the New York Dispensary, Department of Venereal and Skin Diseases; one of the Physicians to Charity Hospital, New York.

IT is, no doubt, owing to the rarity of the occurrence of certain of the varieties of the syphilitic affections of the lachrymal apparatus, that no accurate and particular description of them has, as yet, been published. Since the appearance of the monograph of the younger Lagneau,[1] in which these affections were treated in a somewhat inexact and incomplete manner, some of his cases being very doubtful in origin, and others but imperfectly marked and loosely reported, no formal attempt has been made to fill this void thus left in surgery. Though both Lancereaux[2] and Zeissl[3] devote sections to them in their text-books, yet they do not include all of the varieties. Ophthalmological writings also are equally, if not still more limited in scope; so that there is no reliable guide to the knowledge of these affections. It is to supply this want, therefore, that I purpose, in a concise and I hope clear manner, to trace the clinical history of the affections of the various parts composing this apparatus. Attention once being prominently called to their existence, the literature of the sub-

[1] Maladies Syphilitiques consécutives des Voies Lachrymales. Archives Générales de Médecine, May, 1857.

[2] Traité Historique et Pratique de la Syphilis, Deux édition, pp. 386 and 387, Paris, 1873.

[3] Lehrbuch der Syphilis. II. Theil. Zweite Auflage, pp. 217 and 218. Erlangen, 1872.

ject will no doubt thereafter be increased materially by the publication of new cases. I shall, in the main, base my statements upon my own experience; but in one or two instances I have, from lack of observation, to supply the want by using the cases of others. The chief value of this contribution consists in the recital of two cases which develop the history of an affection very rare and consequently but little known, it being a gummy infiltration into the caruncles. In going systematically though briefly over the subject, I necessarily include some observations already in a measure familiar to many, but I have done so for the sake of completeness, as by thus doing a general view of the whole subject is given in one article. The chief portions of the lachrymal apparatus are the glands, the sac, canaliculi, nasal duct, and caruncles. In the greater number of cases, these parts are involved in syphilitic inflammation by its extension from neighbouring tissues; but in some rare instances the focus of the affection is seated primarily in one portion of them. They are found to be affected both in the secondary and in the tertiary stages of syphilis; and while in the former the morbid process is of a hyperæmic or catarrhal character; in the latter, they are the seat of gummy infiltration, and of inflammation of a severe and chronic form resulting from specific necrosis of the bones in immediate connection. We will consider the affections of the several parts in succession.

Syphilitic Affections of the Lachrymal Gland.—The only recorded instance of a case of syphilitic inflammation of these glands is that reported by Chalons[1] of Luxembourg. The anatomical structure of these bodies is such as to render them very liable to the syphilitic processes, yet they seem in the vast majority of cases to escape.

The case alluded to was that of a person in the first year of his disease, having lesions of an exanthematous character, and an iritis. Coincidently, these glands were observed to become swollen, and their increased size was very perceptible as they pushed the upper lids forwards. The gland of the right side was much more tumefied than its fellow, and caused the eyelid, which was slightly reddened, to drop down over the eye as in the affection named ptosis. There was no pain, and the symptoms were of a mild character. The appearance of the person is described as being very peculiar. The swellings subsided under the influence of a mercurial treatment.

As this tumefaction occurred early in the secondary period, the lesion was undoubtedly of an hyperæmic character, similar to that which attacks the pharynx and tonsils in the same stage of the disease. The diagnosis of such swellings will always depend on the history of the case, and perhaps on the coexistence of other syphilitic lesions.

These glands may perhaps be affected in the tertiary state by gummous infiltration, though such a case has not as yet been recorded. In this

[1] Adenitis Lacrymalis Syphilitica. Preuss. Vereins Zeitung, No. 42, 1859, and quoted by Lancereaux.

event the swelling would undoubtedly increase slowly and painlessly, and either both glands or but one might be involved. The diagnosis would be arrived at by a history of the case, and perhaps the presence of other lesions or of their sequelæ might assist.

The Affections of the Canaliculi, Sac, and Nasal Duct.—It may be stated with much positiveness that these canals are never the primary seat of syphilitic inflammation. Not frequently being affected, when they are thus, it is simply by the extension of inflammation from adjacent structures. Thus the canaliculi and sac become the seat of a catarrhal inflammation in consequence of congestion of the conjunctival mucous membrane continuous with them; by its extension through the nasal duct from the Schneiderian membrane, and by the occlusion of the lower part of the duct. In the latter event, as the secretions do not escape, they become decomposed and are highly irritating. Not only are these parts involved in the secondary period, but also they become affected by tertiary affections of neighbouring parts.

The inflammation of the upper portion of the canal and of the sac, which I have said is of a catarrhal character, varies very much in its severity. Being coincident with and dependent usually upon a conjunctivitis, which generally complicates inflammation of the intraocular structures, it is usually of temporary duration, consisting in a swollen condition of the mucous membrane, which under treatment of the original lesion soon ceases, without leaving any trace. Sometimes the tumefied condition of the parts is so great that temporary epiphora is produced, but usually it disappears rapidly. Not occurring in every case of intraocular trouble, when it does it is not important, and fistula lachrymalis does not result from it. In rare cases the orifice of one or of both of the canaliculi may become slightly ulcerated, but in most cases there is no distinguishing feature of syphilis to be observed. These parts, however, may be the seat of very severe chronic inflammation attended with the development of fistulæ and other annoying symptoms of dacryocystitis. Such cases are dependent on great destructive change in the bony walls, which surround or are in the neighbourhood of the canal. Owing to neoplastic growth late in syphilis, necrosis of the orbital process of the frontal, of the ascending process of the superior maxillary, or even of the lachrymal bone may occur, as a result of which there is compression of the upper part of duct and of the sac, and their function is wholly destroyed. This condition is a formidable one, and is attended with very considerable disfigurement. The sinuses which communicate with the dead bone are the seat of inflammation, which extends to the canal, already the seat of inflammation from compression, and they may even open into the sac itself. During the period of activity of these necrotic changes, much pain is felt, and the inner angle of the eye is greatly swollen and very red. The process is generally slow, and in the end there is sometimes much loss of tissue. In

some cases the syphilitic inflammation in the bones is not complicated with degenerative changes, in which event the inflammation in the sac, which at its height may have been active, subsides with the involution of the bony enlargement, and finally the parts are left intact. I had such a case, in which, among other nodes about the head, there being one on the other border of each supra-orbital foramen, there was a well marked swelling involving that portion of the ascending process of the superior maxillary which articulates with the lachrymal bone, encroaching on a portion of the latter. When this swelling had become large, being raised nearly half an inch above the normal plane of the bones, the sac was very much compressed, its function being abolished, and there was moreover much hyperæmia of the parts. The eyelid was pushed out, and the caruncle was very red and prominent. I feared that it might be permanently injured, but under an active treatment the swelling slowly grew less until finally it was all absorbed, the canal remaining uninjured. In such cases if the inflammation is of very long duration, there is much reason to fear stricture or occlusion of the parts in consequence of the walls becoming attached to one another.

In those cases in which there is considerable necrosis, all of the delicate structures at the inner angle of the eye may be involved in ulceration, by which the sac, duct, and portions of the canaliculus are wholly destroyed; after the healing of the parts has taken place, a cicatrix is formed which greatly disfigures the countenance. The case which forms the text of this description presented peculiar features.

A man seven years syphilitic, in whom large ulcerating gummata communicated with extensive areas of necrosed tissue of the tibia, finding that his rest was prevented at night by pain at the inner angle of the left eye, noticed in a short time a swelling under the skin, which increased very rapidly and with it the soft parts at this site soon participated. As a result of a dissipated life, very soon an extensive ulcer formed, from which a small portion of dead bone was extruded; this led him to seek advice, and his case came under my observation. At that time a funnel-shaped ulcer of syphilitic appearance, which had begun two months and a half previous, was seen at the inner angle, and from it an unhealthy sanious secretion escaped. As the edges of the integument were everted and thickened, the ulcer presented the appearance of being very deep. I ascertained with a probe that dead bone was situated at its bottom and on its sides. Under treatment, local and constitutional, the parts healed slowly, as in four months a depressed radiating cicatrix was formed, which drew the lids inward, producing a permanent epiphora.

In other cases an ulcer of this size might not form, there being perhaps only a trifling sinus, in which event the sac might escape permanent disorganization. Under all circumstances, considering the gravity of these sequelæ, bony lesions of these parts should be treated in an active manner, in order to avert these possible consequences.

Passing now to the lower end of the duct, we find anatomically its

lining membrane to be continuous with that of the nose, and that thin plates of bone form a part of its wall, while other similar structures are in the immediate vicinity.

Now, in secondary syphilis, hyperæmia and ulceration very often attack this membrane, while in tertiary syphilis, both ulceration of the mucous membrane and necrosis of these bony plates frequently occur. In all of these processes, the nasal duct may be involved; in some instances in a mild ephemeral manner; in others with so much severity that the lumen of the duct is destroyed. When in syphilis the Schneiderian mucous membrane is affected, the hyperæmia extending to the duct may be of such a mild nature that no objective symptoms are produced, or the hyperæmia may be very active, the soft tissues of the walls of the duct may be very much swollen, even to the point of ulceration, or, again, to the production of large quantities of pus, and the development of shreds of a fibrinous membrane similar to that which is falsely called diphtheritic when observed about the fauces. In this state the symptoms are very well marked. The inflammation may extend up the duct and involve the superior portions, or above the inflamed part, which, by the excessive tumefaction of the membrane, is impermeable, secretions mixed with pus stagnate, thus involving the whole apparatus in severe inflammation. This condition, even when very serious, may be but temporary, while under proper treatment perfect resolution may take place. Or, again, fistula lachrymalis may occur, which, however, will yield to treatment, unless adhesion takes place between the membranous walls below. This condition is usually observed late in secondary syphilis, only occurring in a very small proportion of cases. I have been very much surprised, in some cases of hereditary syphilis in which the ulceration of the nose was very severe, that the nasal duct should have escaped. The possibility of the occurrence of the inflammation of this duct and of its sequelæ should be borne in mind, and should lead practitioners to institute a local treatment very early in the event of inflammation of the Schneiderian membranes.

But in the tertiary stage and late in hereditary syphilis, the affections of this duct are of much gravity. In some cases in which the inflammation results from extension from an adjacent ulcerated surface, the condition may be of the mild and ephemeral character already described. But there are others in which structural changes occur which are serious in their results. In such a case the ulceration of the mucous membrane of the nose, which in this stage is deep and destructive, may invade that of the canal, which may be rendered finally impervious by the contraction of the cicatrices. During the progress of this lesion the symptoms of inflammation of the duct and of its occlusion will be observed. When the lower part is thus closed by cicatricial tissue, a fistula then almost inevitably forms.

The same result sometimes follows when that portion of the inferior

turbinated which forms the lower part of the wall of the duct is destroyed by necrosis, or when the bones composing the wall higher up are thus affected. In this event the symptoms of the obliteration of the duct are soon developed, which go on until a permanent occlusion is produced. The cases in which this condition is observed are those in which the bones of the nose have been for a long period seriously affected. They are very severe in character, not only by reason of the great distress induced by the disturbance of the function of the parts, but also by the severe pain which sometimes accompanies the process. I recall to mind a woman, the subject of hereditary syphilis, who suffered for years with frequently recurring attacks of necrosis of the nasal bones, which, in spite of active local and constitutional treatment, relapsed in a distressing manner, only ceasing when the greater part of the bony plates had become necrosed and were exfoliated. Also, the case of a man suggests itself, who had fall of the nasal bones, severe protracted necrosis of the turbinated bones, and as a result fistula lachrymalis of both sides.

In all of these instances, it will be seen that the inflammation of the lachrymal passages has been secondary to that of other tissues. We have no recorded instance of syphilitic inflammation beginning primarily in the canal, and it is probable that it never does. It would be rather difficult to establish this fact under any circumstances, owing to the inaccessibility of the parts to ocular inspection.

Little need be said of diagnosis in these cases, as the processes when simply ulcerative present no distinguishing features, and their nature is to be determined chiefly by the history of the case, in each one it being well to suspect syphilis. When necrosis occurs it may, as a rule, be considered syphilitic without any fear of mistake. The treatment should be directed to the cure of the trouble in the nasal cavities, with appropriate measures for that of the lachrymal passages.

It may be interesting to be known that the chief end of Lagneau's monograph is to describe the fistula lacrymalis which follows necrosis of the bony walls of the upper part of the canal. He reports several cases, but they show no new points.

Syphilitic Affections of the Lachrymal Caruncles.—The description of the syphilitic affections of these structures is as yet wholly unwritten, for I have not been able to find a recorded case or description of such.

These little glandular bodies are affected in both secondary and tertiary syphilis. In the secondary stage they are congested in an ephemeral manner by the extension of the hyperæmia of the conjunctiva, which we have already seen sometimes involves the punctæ and canaliculi. Like the affection of these latter structures, that of the caruncles is equally mild and of temporary duration. But in the tertiary stage they may be profoundly implicated. In consequence of nodes of the subjacent bones they are sometimes pushed out of place, then becoming red and tumefied. In this

condition, in which we have found the sac to be sometimes seriously involved, the caruncle may be the seat of inflammation which has originated in the sac. Even when this condition has been quite active, resolution may occur, the integrity of the body being finally restored. But in some cases of this kind, when contraction and adhesion of the walls of the sac follow protracted inflammation due to the subjacent pressure, the caruncle becomes implicated and in the end is atrophied, its glandular structure being then lost, and being replaced by cicatricial tissue. In the cases already considered in which necrosis supervened in the nodes, the sac and with it the caruncle was destroyed. This happened in the case above cited. In all of these instances, however, the inflammation was secondary to that of other parts.

The two cases which follow show an entirely different condition from any which we have thus far studied. They distinctly prove that the caruncles may be primarily involved by syphilis without the implication of other parts. This affection, as has been said, has never been described before; hence these cases are very important. Previous to considering its nature I will give the histories of the cases presenting it.

Carlos G., American, aged twenty-nine, harness-maker, became syphilitic in the latter part of 1865, having a chancre which was followed by a general rash, buccal mucous patches, and rheumatoid pains. His strength became very much reduced, and rapidly becoming emaciated, his health was profoundly affected. He took medicine during the following year with irregularity, being under the care, at varying periods, of a number of physicians. The debilitated condition into which he had fallen continued, and during this year his chief visible syphilitic manifestations were superficial ulcers of the dorsum and sides of the tongue, and severe pains in his joints. Early in the year 1867 he experienced a more profound condition of ill-health and debility, and about the same time he had a general rupial eruption over the body and extremities. Around the margin of the hairy scalp, upon the forehead, a string or line of syphilitic tubercles developed. They were slightly elevated, quite broad, of a coppery hue, and the seat of slight epidermal exfoliation. Prior to that outburst of syphilitic lesions, he had married, and his wife became syphilitic through a labial chancre. She, some months after, was delivered of a child, which I was called to treat for syphilis; its lesions were palmar and plantar pemphigus, an extensively distributed ecthymatous syphilide and distressing coryza.

In the fall of 1868 the husband noticed, almost coincidently with his syphilides, that a swelling or tumour appeared at the inner angle of each eye. The closure of the lids was rendered slightly difficult, but by causing the orbicular muscles to contract with a little more than ordinary force, the patient was able to coapt them. The secretion from the eyes passed over each cheek. Upon examination, a swelling of each caruncle was found. This little body (the description of one being sufficient), was enlarged to fully four times its normal size, being of a pyramidal shape. When the lids were firmly closed, the end of each caruncle stretched beyond them fully two lines. The colour was of a slightly deeper red than normal, and the surface of the body was not at all raw, and rather glazed in appearance; in short, there was no ulceration whatever. The neighbouring con-

junctiva was slightly redder than natural, but there was at no time any other abnormal secretion from it other than a small piece of desiccated pus which was found in the morning after sleep. The patient informed me that he occasionally experienced a slight sensation of itching in these bodies, causing him to rub them. As a result the conjunctiva often became very red, but the trouble always disappeared rapidly. On some occasions he bathed the eyes with cold water to allay the irritation.

To the touch each caruncle appeared composed of a firm tissue. Though sought for with care, no lesion of the subjacent bones was discovered, it being evident that the morbid changes were strictly limited to the caruncle alone. My diagnosis was gummous infiltration into these bodies. It is important to add that the patient had never suffered from any affection of the eyes, nor had he had any trouble of the Schneiderian membrane.

At the earnest advice of friends, who argued that an affection of the eye should be treated only by a specialist, he placed himself under the care of an ophthalmologist. This gentleman regarded the case as one of cancerous degeneration of these appendages, advised an operation, which, being consented to, was performed by him. The amount of tissue extirpated must have been quite large, and to cover up the resulting gap the skin above and continuous with the lids had been slid downwards, meeting a small flap from the side of the nose and cheek. The result was that the patient exhibited a hideous appearance. At the inner end of each lid was a veil formed by this plastic operation, which covered over nearly an inch of the sclerotic as far as the margin of the cornea. The patient still suffered with epiphora, which was then rendered incurable, and his cutaneous lesions still persisted. I learned that no inquiries had been made as to his condition, nor had he been placed upon an internal treatment. It is well to add that previously Dr. Willard Parker had concurred with me in my opinion of the syphilitic origin of the various lesions. The patient, being greatly dissatisfied with the result of the operation, expressed himself freely to that effect. He returned under my care in February, 1868. I placed him upon the mixed treatment, using the following prescription: Bichloride of mercury, one grain; iodide of potassium, four drachms; syrup of the iodide of iron, one ounce; simple syrup and water, of each one and a half ounce; besides this he took cod-liver oil freely. The crusts of rupia were removed carefully, and the ulcers thus exposed were kept covered with a mild mercurial ointment. The result was eminently satisfactory—his cutaneous lesions gradually disappearing, his health being much improved. The tubercles upon the forehead, having remained for a long period without treatment, had induced such profound change in the skin that after their absorption typical depressed cicatrices were left. I saw him several times during the summer, when he was improving in health and gave no evidence of syphilis.

The next case was similar in appearance, but fortunately more satisfactory in its results. The patient, Patrick R., æt. 34, a labourer, was first seen by me in my service at the New York Dispensary, in January, 1870. He gave a confused account of having had a chancre; but his statements as to the existence of constitutional syphilitic lesions were very clear. He had had, in February, 1868, a copious rash upon the body, upon the palms and soles, and his scalp had been largely covered with scabs. He had been treated at New Orleans by a physician, from whom he obtained a prescription, ordering iodide of potassium in five-grain doses, of which he had taken intermittingly during part of two years. He stated that he

had been free from eruptions during the year 1869 until about the month of November, when he noticed some spots on the arms over the great trochanters, and in the neighbourhood just below the head of the left fibula, and upon his scalp. Shortly after this time he observed a swelling at the inner angle of each eye. He thought that the left swelled first, shortly after that the right. Upon examination I found two tumours of similar appearance to case No. 1, with the exception that they were slightly broader at the base, seemingly to shade off into and be seated for a very short distance in the surrounding conjunctiva. They being fully half an inch in height jutted out very perceptibly between the lids. They were not superficially ulcerated, and gave forth no secretion. Occasionally an itching or tickling sensation caused the patient to rub them, when slight inflammation followed. The function of the bodies was wholly impaired, tears and secretions passing over the cheeks. To the touch they also presented a sensation of firmness. It was evident also in this case that there was no osseous lesion underneath, but that the affection was limited to the caruncles. This patient had never had any affection of the eyes, nor at any time had secretions deviated from the normal channels. Closure of the lids was attended at first with a little effort, and when the parts were coapted these little bodies protruded. Having in my mind the history of the case and the teachings of the previous one, I placed the man on the same combined treatment, telling him to avoid all sources of irritation, and to wash the parts carefully each day with water, and then to moisten them and the lids with a little simple ointment. This time I averted the lapsing of the patient from my observation and care, by forewarning him. The treatment was followed, with more than usual assiduity for a person of his class, and in a short time a diminution in the height of the swellings was apparent. They gradually declined in their whole extent, and in ten months the caruncles were reduced to their normal size. My hopes for a perfect result were not, however, realized, as the diminution of the appendages continued for a month longer, in fact atrophy took place, and the little bodies were wholly absorbed, leaving a rounded sulcus in the inner angle of each eye. The resulting appearance was rather disfiguring, and it gave the man a frightened, staring look. Besides this he was ever after afflicted with epiphora, the tears and secretions from the conjunctiva escaping over the cheeks. This fact suggested to me a point which I have not seen mentioned, namely, that one of the functions of the caruncles is to conduct the secretions to the punctæ lachrymalia. Certainly there was no other explanation of the deviation of the tears; consequently it is fair to assume that their proper conduction is one of the natural functions of the caruncles.

Here, then, are two cases of syphilitic men in whom the lachrymal caruncles enlarge in a subacute painless manner. The question arises, what is the origin of the swellings? Their history excludes any question of traumatism or of simple inflammation, it being evident that they were the seat of a tissue infiltration. Now, as the syphilitic processes were active in the men, they having lesions peculiar to a late period of the disease, namely, gummy tissue proliferation, it is not unfair to assume that this was the same process which occurred in these appendages of the eyes. The structure of these bodies is such as to render them liable to syphilitic inflammation, as they are composed of glandular and connective

tissues, and are exceedingly vascular. Therefore, though they have not been reported to be the seat of syphilitic neoplasms until this time, there is no good reason which can be urged why they should not, and there are, as we see, reasons for supposing that they should. Why the neoplastic development should be thus sharply and symmetrically limited is difficult to determine, yet we frequently meet with similar equally peculiar infiltrations. Seeing that this abnormal tissue was developed elsewhere in the body and in a symmetrical manner, it is certainly not a far-fetched conclusion to say that the lesion of the caruncles was a gummy neoplasm. As corroborative of this view the result of the treatment is very important. In the first case no conclusions can thus be drawn, but in the second the evidence of the prompt action of the anti-syphilitic remedy was very apparent, as it induced resolution of the tumours without the aid of local applications. Therefore, I think, we are warranted in adding this new form of syphilitic lesion to the numerous ones already described.

In the two cases which I have detailed, the course of the swelling was slow and unattended by any marked symptoms; but as we know that late syphilitic processes are sometimes attended with inflammatory features, it would be injudicious to conclude that a subacute course is the rule. The error of the physician who operated upon the first case suggests that such swellings may often be looked upon as cancerous. Such an origin is to be excluded or determined upon, only, after a careful consideration of the history and features of the case; when, however, there is symmetry of development, it may be considered, I think, as in favour of syphilis and exclusive of cancer. The age of the patient should also be taken into consideration.

As so little is known of lesions of the caruncles, it may be interesting to briefly call attention to two cases reported by Graefe,[1] showing partial enlargement by fibrous tissue growth.

A healthy girl, eighteen years of age, sought advice for a swelling situated at the inner canthus of the eye. It had grown in one year to the size of a hazel-nut. For several months it had caused an annoying sensation of pressure when the lids were closed. Upon examination it was found that the tumour was distinctly circumscribed, and covered with a smooth reddish mucous membrane. It grew from the anterior surface of the caruncle, being connected by a thin and long band which was composed of dense fibrous tissue A section through this tumour showed that it was composed of moderately loose connective tissue, which at some points appeared perfectly homogeneous, at others somewhat fibrillated. By pressure a small quantity of a watery fluid was evacuated. Under the microscope, layers of elongated nuclei and spindle-shaped cells were seen. The caruncle was normal. The small wound healed in a few days.

In a boy ten years of age, a swelling had gradually developed during four years. The tumour was half the size of a hazel-nut, presenting an intensely red surface covered with yellow dots. The magnifying glass

[1] Archiv für Ophthalmologie, vi. P. I. pp. 289–290.

showed that small funnel-shaped openings (evidently the orifices of glands), corresponded to these dots, from which very fine hairs grew. At some points of the surface whitish patches were seen through the mucous membrane, which resembled in appearance the inspissated or calcified secretion of the Meibomian glands. As the tumour annoyed the patient, not only by its size, but also by causing conjunctival irritation, it was excised, together with a portion of the caruncle of which it formed a part. Under the microscope it was seen to be composed of glandular structure, embedded in a scanty layer of connective tissue.

These cases, contrasted with my own, will assist in future in the establishment of a correct diagnosis.

125 EAST 12TH STREET, N. Y., January, 1875.

ART. VII.—*Trismus Nascentium.* By PHILIP A. WILHITE, M.D., of Anderson C. H., South Carolina.

MANY years ago Dr. J. Marion Sims, then of Montgomery, Alabama, now of New York, published in the *American Journal of the Medical Sciences* (April, 1846, July, 1848, and October, 1848) three remarkable papers on trismus nascentium, which at the time attracted great attention both at home and abroad. His views in regard to the pathology and treatment of this disease were novel and original; and were sustained by facts and arguments of a most convincing character. Yet they have not been accepted by the profession at large; and the medical men of the present generation are in the main ignorant of his teachings. These papers made a profound impression upon my mind; for I had seen several cases of trismus, all dying, and I was ready to grasp at anything that promised success.

Dr Sims contended that trismus nascentium was not traumatic tetanus, as had always been supposed, but

"that it is a disease of centric origin, depending upon a mechanical pressure exerted on the medulla oblongata and its nerves; that this pressure is the result, most generally, of an inward displacement of the occipital bone, often very perceptible, but sometimes so slight as to be detected with difficulty; that this displaced condition of the occiput is one of the fixed physiological laws of the parturient state; that when it persists for any length of time after birth it becomes a pathological condition, capable of producing all the symptoms characterizing trismus nascentium, which are instantly relieved, simply by rectifying this abnormal displacement, and thereby removing the pressure from the base of the brain."—*American Journ. Med. Sciences*, July, 1848, page 59.

Dr. Sims contended that the inward displacement of the occiput, which always existed at birth, was kept up by the dorsal decubitus, whether in the cradle or in the mother's lap; that the symptoms of trismus were the result of this displacement, and that the lateral decubitus was sufficient to relieve the displacement and to cure the disease.

I was completely captivated by a theory so simple and so plausible, and I at once determined to investigate the subject from his stand-point, if an opportunity should ever offer again. I did not have to wait long, for soon after I read Dr. Sims's first paper I was called to my first case.

CASE 1.—It was a male child (white) twelve days old. There was nothing unusual in the labour, and the child was well and hearty till the seventh day, when it began to complain, and for five days it had not been able to draw the breast "to do any good"—and the mother thought it would certainly die of starvation. From having been fat and plump it had in five days become very thin. It lay in a cradle on its back most of the time. Its left arm and leg seemed to be paralyzed, and yet they were occasionally affected with spasmodic jerks. It was evidently a case of incipient trismus, or trismoid, as Dr. Sims designates the disease in its mildest form. There were no clonic spasms, and yet there was no doubt as to the character of the disease. I raised the child from the cradle and examined the head, and found the occiput displaced inwardly, the edges of the parietal bones overlapping those of the occipital along the line of the lambdoidal suture.

Having seen cases like this before, in the same stage, all dying, I determined to treat this one according to Dr. Sims's plan. I gave the child no medicine whatever, but I placed it on its side on a pillow, and allowed it to lie there about thirty minutes. I then changed it to the opposite side for thirty minutes more. I omitted to mention that for the five days of its illness it slept but little, and was whining and crying all the time. When I placed it on its side, all these symptoms of distress ceased and it rested quietly. With this hour's experiment of the lateral decubitus, I requested the mother to apply the child to the breast. She did so, and it seized the nipple, and, to the surprise of all present, it sucked with the greatest avidity, and from that moment it was well.

As before said, Dr. Sims describes two forms of the disease, trismus and trismoid, or acute and chronic. And according to my observation this distinction is correct.

The first symptom of trismus is inability to suck. This Dr. Sims says is pathognomonic of the disease. The child loses the power of seizing the nipple; and if the nipple should be forced between the jaws, it has no power of suction. The child seems to be indescribably distressed, moans, whines, cries, is colicky, sometimes has griping passages from the bowels, is restless, uneasy, sleeps badly, has borborygmi, slight spasms of one or both upper extremities, then tonic rigidity of the whole muscular system with clonic spasms, which come on at intervals, and are often excited by the touch or a noise. The expression of countenance is very peculiar, and can never be forgotten when once seen. The acute form terminates fatally in two or three days, sometimes in less time; while the chronic or milder form of the disease may continue for weeks and even for months—the child slowly wasting away to a mere skeleton, and dying of what was formerly called marasmus, which is but another name for gradual starvation.

I believe implicity in the views expressed by Dr. Sims in regard to the pathology of this disease. It is clearly due to mechanical pressure upon

the brain, expended ultimately upon "the medulla oblongata and its nerves." When I see a certain set of symptoms following a fracture and depression of a piece of the skull in the adult, suddenly relieved by elevating the depressed bone, I cannot help thinking that they bear the relation of cause and effect. And when I have seen in scores of instances certain symptoms characterizing what we designate by the term trismus nascentium, attended with a depressed condition of the occiput, suddenly relieved simply by elevating the depressed bone, I am bound to believe that they bear the relation to each other of cause and effect. The occiput is sometimes so slightly depressed that it is not easy to detect it; again, when the child has lain for a long time on its back in a cradle, we find it depressed to the full thickness of the bone; and again we may find only one edge of it under the parietal bone.

Sometimes a very slight depression will produce all the symptoms of trismus in an aggravated form; again a deeper depression may produce the disease in its milder form. The dorsal decubitus and the cradle together are the great sources of evil. The method of suckling the child with the occiput resting on the mother's arm, is another factor in pushing the occiput inwards. The disease can be as well produced by prolonged lateral decubitus when the child's head has rested upon hard substances, causing an overlapping of the edges of the parietal bones along the sagittal suture. For further information on these points, I must refer the reader to the papers of Dr. Sims previously alluded to.

The prognosis of this disease is always unfavourable when left to the recuperative powers of nature; or when treated on any other principle than that laid down by Dr. Marion Sims and advocated in this paper.

Hundreds of children die annually of this disease, where its real nature is not understood even by the physicians in attendance.

To illustrate the principles of treatment already indicated, I propose to give the histories of a few cases out of the many that have come under my observation in the last twenty-five years. The case (1) already related, and cases 2, 3, and 4, to follow, are given from memory. They occurred when I resided and practised medicine in Franklin County, Georgia; and in moving to South Carolina my note-book was lost.

CASE 2.—Child of Mr. E. W. W., of Carnesville, Georgia, was born in March, 1851. It was a large and healthy child at birth, and remained so up to the third day, when the mother noticed that there was some difficulty about its drawing the breast, and on the evening of the fourth day it lost the power of sucking altogether. On the sixth day I was called to see it. It was lying on its back in a cradle, and had all the symptoms of a well-marked case of trismus. There were a number of old women in the room who had exhausted their specifics on the child, all of whom pronounced the case fatal. I recognized the character of the disease as soon as I saw the child. From the symptoms and the history of the continued dorsal decubitus in the cradle, I fully expected to find a depressed

occiput, and I was not disappointed; for on taking the child up from the cradle I found the edges of the occiput much depressed below those of the parietal bones. I lost no time in placing the child longitudinally on a pillow on the side, with the face turned well to the horizon, so that the weight of the head was sustained on its fronto-parietal portion. After resting in this position for about thirty minutes, I had it applied to the mother's breast, and, strange as it may seem to those who have never witnessed such a thing, the child seized the nipple and sucked vigorously; and from this time there was no return of the disease. It must be remembered that the child had not been able to suck at all for nearly forty-eight hours; and very little for twenty-four hours previously. I gave it no medicine whatever, and this wonderful change from apparent death to comparative health was effected simply by removing the pressure from the base of the brain. The child was kept on one side or the other for three or four days, when it was found that the edges of the occiput overlapped those of the parietal bones.

CASE 3.—A negro child (J. H., of Carnesville, Georgia), born in the summer of 1852. At birth it was a fine healthy child, but when about two weeks old it began to cough, became very thin, and imperfectly nourished. The cough gradually got worse, and a physician was sent for who pronounced it a case of hooping-cough. The child went from bad to worse, the cough became very distressing, and the emaciation extreme. When it was about four weeks old, I was consulted, and found it greatly emaciated, looking old and wrinkled, with a most painful expression of face, and the cough was very constant and troublesome, and might well have been taken for hooping-cough; but the term laryngismus stridulus will better explain it. It also had frequent colicky, griping passages from the bowels. The peculiar physiognomy of the child, with the history of the case, led me to suspect that its disease belonged to the trismoid group described by Dr. Sims. I forgot to mention that the child had paralysis of the left arm and leg. This symptom aided me in the diagnosis. On examination I found the occiput very much depressed, loose, and easily depressed upon the brain. By pressing the already depressed occiput further in upon the brain, the peculiar stridulous cough could be produced at will. This was done over and over again, the violence of the paroxysm depending upon the amount of pressure, and the extent to which the bone was forced in upon the brain. These experiments were continued till the physician (with whom I was called) and all present were satisfied that the depressed occiput was the source of all the evil. I gave directions about the management of the case, with the full assurance that the child would recover if they followed out my prescription of the lateral decubitus instead of the dorsal. I saw the case no more; but I heard a few days ago (Oct. 1874), from the physician in attendance at the time I was called, that the directions I gave were followed, and that the child speedily recovered.

CASE 4.—A male child (son of Mr. U. S., of Franklin Co., Georgia) was born in June, 1852. I was called to see it when it was six weeks old. The mother stated that it was a large healthy child at birth, and seemed to thrive and do well till it was about a week old, when it became colicky, and was uneasy, restless, and crying almost all the time. The mother said that from the time it was first taken it could not suck much, that it could not take hold of the nipple, that "the more she tried to make it suck, the less it would suck." At first she attributed its inability to suck, to the colicky griping pains from which it was scarcely ever free; but she soon

determined that it could not take hold of the nipple at all, and she was then obliged to resort to spoon feedings to keep it alive. In this her efforts were very little better than with the breast. The child was very much emaciated, and had paralysis of the left side, which had been noticed for some time by the mother. It had the irritable whining cry, and the peculiar expression of countenance so characteristic of the trismoid affection, that I at once examined its head, and found the occipital bone very considerably depressed below the level of the parietals.

From the history of the case, and from the present symptoms, I had no doubt that the pressure on the base of the brain was the source of all the trouble. The bones of the head were unusually well ossified, and I thought that an operation would be neccessary for the elevation of the occiput from its abnormal position. I explained to the parents the nature of the disease, telling them that death was inevitable if the occipital bone remained as it was; that we would try the lateral decubitus for a day or two, and if there was no improvement, I would operate and elevate the bone. They would not for a moment hear of a surgical operation. I gave directions for the management of the case, and requested them to send for me if they should change their minds about the operation. I saw the child no more, and it died about a week afterwards.

The following cases are reported from notes taken at the time of my visits.

CASE 5.—On the 10th Sept., 1859, I was called to see the male child of Mr. I. L. S., and received the following statement:—

The child was fourteen days old, was strong and healthy at birth, and continued so till the eighth day, when it began to fret and cry, and seemed to be in pain, and was very restless all night. It sucked with difficulty. The next day all these symptoms were worse. It had several greenish passages, but with no relief to any of its sufferings. It went on from bad to worse till I was sent for. It could not suck at all; had great rigidity of the jaws, spasmodic jerking of the right arm and leg; had borborygmi and frequent dejections of a thin, greenish appearance, which were not in the least controlled by astringents and carminatives. It was much reduced in flesh, and had the cry and expression indicative of persistent suffering. The child had been lying on its back in a narrow cradle all the time when not in the mother's arms. I requested the mother to take it up and let me see it suck. It seemed to be hungry, but could not take the nipple in the mouth. On examining the head I found the occiput displaced inwardly to a considerable extent.

The parents and friends were greatly alarmed about the condition of the child, and had for some hours expected it to die. I explained to them that the child's condition was produced by the dorsal decubitus, and the consequent pressure of the occiput on the brain; that it was necessary to relieve this pressure or death would take place very soon. I showed them how to place the child in the lateral decubitus, and directed it to be changed from side to side. Gave no medicine, and as I was much fatigued by a long night's ride, I proposed to go to bed and leave them to carry out my instructions. It was placed laterally on the pillow at 2 A. M. The parents protested against my going to bed without giving the baby some medicine. But I had such faith in the lateral position that I simply said, "do as I told you, and the child will soon be well."

I arose at 7 o'clock, and was greeted with the cheering news that "the

baby has been sleeping soundly, and is now sucking freely for the first time since it was first taken."

I found it sucking as a healthy child should, and it seemed to be perfectly well. There was no colicky pain, no diarrhœa, and the spasms of the arm and leg had ceased ever since it was laid on the pillow. On examining the head I found that the occiput was not more than half as much depressed as it was at 2 o'clock when first placed on the pillow. From this time the child was well, and that too without a drop of medicine. I saw the child no more till he was able to run about.

The parents were so much afraid of the recurrence of the disease that they kept the child on the pillow for an unnecessarily long time.

CASE 6.—On the 8th July, 1861, Mrs. A. M. A. gave birth to a strong, healthy male child, which continued well till it was about six days old, when it began to show signs of uneasiness and suffering, as manifested by fretting, whining, moaning, and sleeplessness. These symptoms gradually increased in severity in spite of all they could do, until I saw it on the 28th of the month. It was then twenty days old, and had been ill for a fortnight. It was very much emaciated, very small for its age, evidently lighter than it was at birth, and was very feeble. It slept but little; moaned, whined, and cried almost all the time. Countenance sharp and peaked; frequent dejections of a greenish, slimy character. It took but little nourishment, and looked like it might die of exhaustion at any moment.

This child had no spasms, no rigidity of the limbs, no stiffness of the muscles of the jaws, and no inability to suck—all of which characterize true trismus nascentium, and yet I felt satisfied that all its other symptoms could only be explained by reference to the active cause of trismoid. The child had been kept constantly in a narrow cradle on its back. This prolonged decubitus, and the fact that it was well and strong up to the usual time for the development of trismus, and that it had a group of symptoms incident to that disease, led me to examine the condition of the occiput. I found it slightly depressed. The depression would not have been recognized by a careless observer, or one unaccustomed to investigate such cases. And yet I was satisfied that this depression of the occiput was the origin of all the trouble. I had the child placed lengthwise on a pillow, flat on its side, and I directed the nurse to change it from side to side, but not to place it any more on the back. To allay the anxiety of the mother, I ordered an infusion of assafœtida to be given occasionally.

July 29. Child rested much better, and slept more during the night than at any time since it was taken ill. Ordered perseverance in lateral decubitus. No medicine.

30*th*. Much improved. Slept still better. Takes more nourishment. Cries much stronger. Occiput gradually regaining its normal position exterior to the edges of parietal bones. Continue lateral position. No medicine.

31*st*. Improvement very marked Bowels moved less frequently. Dejections more natural.

August 1. Slept very well. Bowels better. No whining, but cries strongly when it cries at all. Occiput nearly normal.

From this time on convalesced gradually, and soon got perfectly well, without any other treatment than that of position. It took only two or three doses of assafœtida, on the day of my first visit, no medicine afterwards. Before I saw it, it had been dosed liberally with astringents, carminatives, and anodynes, without the least improvement.

CASES 7, 8, and 9.—On the 9th March, 1863, at 4 o'clock A. M., Mrs. W. R. gave birth to triplets, two girls and a boy, fine, hearty, plump children, the three weighing 19¾ pounds. There was nothing unusual in the labour, and the children were physically beautiful. But as they had not expected so many at once, sufficient provision had not been made for their accommodation; they were all laid or rather packed into a small crib, only large enough for one child. They were laid side by side on their backs, face upwards all the time, except when they were taken up to be suckled. They seemed to be as hearty and vigorous as children of their age could be up to 4 o'clock A. M., March 12th, precisely three days after birth, when the first indication was given that anything was wrong. Mrs. R. said that about 2 o'clock in the morning of the 12th, when she went to suckle the children, one of the girls could not take the nipple nor suck, and the more she tried to make it suck the worse it got, and she soon discovered that its jaws were stiff, and that it could not swallow, for when she poured a little milk into its mouth, it would run out at the nose; that it was whining and crying all the time, and its head constantly rolling from side to side, "that its eyeballs and lids were in constant spasms, the balls rolling and jerking, and the lids snapping and squinting." And she described it as having tonic rigidity with clonic spasms. All these symptoms grew worse. The child was never able to suck or swallow again, and it died at 4 P. M., about twelve hours after the disease was fully developed. Between 12 and 2 o'clock P. M. the other two children were taken in the same way, and with the same set of symptoms as the first. The whining cry, the nystagmus bulbi, the squinting, the inability to suck, the locked jaws, the spasms of face and extremities, were alike in all three, and the little boy died at 8 P. M., being from six to eight hours from the advent of the disease. The friends watched with the remaining child all night, expecting every moment to see it pass away as the others had.

On the morning of the 13th it so happened that I was passing the house to make a visit in the neighbourhood; and not having heard anything from Mrs. R. and the babies since I left them on the 9th, I called to inquire after them. On entering the house I was greatly surprised to see a coffin and a gathering of the neighbours, for I expected to be sent for if any emergency should arise to make a visit necessary. I was informed of the facts already detailed, and was told that the third child would soon be dead, as it had been dying all night, and that they were only waiting for it to die so that they could bury it in the same coffin with the others. From the history of the symptoms detailed I recognized the fact that all three of the children had trismus in the acute and violent form, and I at once asked to see the one that was yet alive. I found the child lying on its back in the crib, and in the last stage of the terrible disease that had so suddenly taken off the other two. It was so weak that it could scarcely cry, had no perceptible pulse, and like all present, I really thought every breath would be its last. I took it up from the crib to examine its head, and found the occiput depressed to an incredible extent.

Notwithstanding the fact that the child seemed almost moribund, I stated to the parents and friends that I wished to try the experiment of the lateral decubitus. They at first objected to my doing anything at all, saying the child must die as the others had, and that it would soon be out of its misery. Mrs. R. said it had not been able to swallow for the last fifteen hours, and what was the use worrying a dying child. However I carried my point, and had the child laid lengthwise on a soft pillow on its side,

and turned from side to side every fifteen minutes. From the moment it was laid on the side, a decided change was seen in all its symptoms, and in less than one hour and a half from the time the lateral decubitus was instituted, all spasm ceased, the jaws were unlocked, and the child sucked freely, and swallowed well. I gave it no medicine, but simply directed that lateral position should be kept up for some time, being careful to change it from side to side every hour or so.

Before leaving, I examined the heads of the dead children, and found the occiput in each depressed to an unusual degree, leaving no doubt in my mind that they might have been saved by the proper lateral decubitus if it had been tried in time.

I requested the parents to send for me if my little patient did not progress favourably. It rapidly recovered, and I saw it no more till it was eight months old, and there was not a finer child in the country of its age.

Mrs. R. informed me a few days ago (since I began this article), that the children were taken sick as they were born, that is, the first child born was the first taken, the second was the next, and these were the two that died.

CASE 10.—In March, 1868, C. McL. brought his child (female) to my office for advice. It was hearty at birth, but when about ten days old it began to complain; became restless and sleepless, and whined and cried almost all the time; was colicky, and had frequent passages, which were sometimes greenish, and again thin and watery. It was now two months old, and was pale, puny, and greatly emaciated; was restless, and seemed to be in constant distress, as manifested by involuntary movements and the peculiar expression that belongs to trismoid cases. It slept only when under the influence of anodynes, and then for but a short time. It had never had spasms; it had always sucked with difficulty, though they noticed no stiffness or locking of the jaws. It was all the time licking out its tongue as if it were hungry. Recognizing the character of the disease, I examined the head, and found the occiput clearly displaced inwardly under the parietal bones. The bones of the head were well ossified, and the edges of the occiput seemed to be impacted under those of the parietals. I stated to the father that medicine could do his child no good; that this was a case of trismoid affection, due to the pressure exerted by the displaced bone upon the base of the brain; and that it was necessary to elevate the bone. I gave him directions about the lateral decubitus on a pillow, and requested him to bring the child to me again in two or three days if it should be no better. In a week he returned, saying he had carried out my instructions, but the child was no better, on the contrary worse; for it was weaker, and, if possible, more emaciated. I then explained to the father that the only hope of relieving the child was to perform a slight operation on the head, for the purpose of elevating the occiput from its depressed condition. But he would not hear of such a procedure, and returned home with the child, and it died about a week afterwards.

CASE 11.—In June, 1870, Mrs. A. McL. rode to my office on horseback, a distance of ten miles, with her infant in her arms, exposed all the way to the sun's rays. The child (female) was six weeks old. The mother stated that it was well and hearty at birth, but in a few days after it began to complain; that it moaned and cried all the time; was restless, and slept only when taking cordials and anodynes; that it had constant trouble with its bowels; that it was colicky, and had frequent dejections

which were sometimes green, and again clay-coloured. It had not had spasms nor stiffness of the jaws. It was pale, sickly-looking, and extremely emaciated, and had the peculiar distressed trismoid expression. The usual routine of anodynes and astringents had been exhausted in this case, without the least benefit. It resembled in every particular the case (10) just described. The two cases were children of two brothers. On examining the head, I found the occiput displaced inwardly to a marked extent. The edge of the occiput on the left side was closely impacted under the corresponding edge of the parietal bone; the right was not pushed in so far, but appeared to be firmly held in its abnormal position. My opinion was soon made up that the displaced occiput was the sole cause of all the trouble, and that the ten-mile horseback ride, with the occiput resting all the time on the mother's arm, or on her knee, had greatly aggravated all its symptoms. I explained to the parents the philosophy of the lateral decubitus; gave them a pillow, and showed them how to lay and carry the child on it, and explained that I believed it would be necessary to perform an operation to elevate the depressed bone. I told them to send for me, if their ride home did not kill the child, and I would go and operate on the bones of the head, and try to rectify the position of the displaced occiput. They did not send for me, and the child died about ten days after I saw it.

CASE 12.—On the 20th October, 1870, Mrs. A. F. D. gave birth to a female child. It was large and healthy. Its head was large, round, and symmetrical. It did well for the first twenty-four hours, after which it began to be restless, sleepless, and fretful all the time, making a distressing moaning, with occasionally a peculiar sort of unpleasant breathing. It breathed as if it had taken a severe cold. It had great difficulty in taking the nipple and sucking. The nurse was very faithful, and anxious about the child, and seldom laid it in the cradle, but held it on her lap most of the time on its back. The moaning and restlessness were attributed to colic, and she gave it repeated doses of paregoric and catnip tea, but with no benefit. These symptoms gradually grew worse; the difficulty of seizing the nipple and sucking was very great; the moaning, crying, and colic were constant, and it seemed to be in great pain. Thus it went on from bad to worse, till 11 o'clock P. M. on the seventh day, when it suddenly gave a loud scream, and went into convulsions. They gave it a warm bath, but the clonic spasms followed each other in rapid succession all night, and until I saw it at 10 A. M. the next morning (eighth day). When I arrived, it appeared to be in a hopeless condition. Power of nursing gone, tonic rigidity extreme, clonic spasms in rapid succession, and it seemed that each spasm would end its life. It was almost moribund, and was lying in the nurse's lap face upwards.

Seeing at a glance that I had an aggravated case of trismus to deal with, I lost no time in examining the condition of the head, and found the occipital bone pushed deeply in on the brain. I immediately took it from the nurse's lap, and placed it on a soft pillow, lengthwise on the side, at the same time manipulating the parietal bones, so as to modify the position of the displaced occiput. It never had a clonic spasm after it was placed on the pillow, and in a very short time the tonic rigidity had all disappeared, and in one hour it took the breast and sucked freely; gave no medicine; left directions for a continuance of the lateral decubitus; 8 P. M. found the child well; next day child perfectly well, without a drop of medicine of any kind; occiput in its normal position.

December 5, 1874. I saw the little girl to-day, and there is not a finer child of her age in the county. I read the above history to the mother, and her recollection of the case corresponds exactly with my notes of it.

This article has been extended to a greater length than I anticipated; yet I feel unwilling to bring it to a close without reporting two more cases of trismoid, which were very similar, and are interesting by contrast of treatment and result.

CASE 13.—September 21st, 1873, when casually passing a neighbour's house, I was hailed, and requested to stop for a moment, when two ladies came out to the road, one carrying an infant in her arms. On getting near me, one of them said: "Well, doctor, we stopped you to inquire if you could tell us what is the matter with this baby." I replied: "In the absence of the history of the case, and judging only from its age and the peculiar expression of countenance, I should think it was suffering from what doctors call trismus, or lockjaw." For it had that peculiar trismal countenance so characteristic of the disease, and which I am unable to describe, but which once seen cannot soon be forgotten. I examined the child's head as I sat in my buggy, and found the occiput depressed to a considerable extent below the level of the parietal bones, one edge more than the other, and apparently closely jammed there. I explained briefly the nature of the disease, and as I was in a hurry to make a professional call further on, I promised to stop in on my return, and inquire more particularly into the child's case.

On my return I learned the child, a female, was born on the 19th July, 1873; that it was now two months old; that its mother, Mrs. O. H. K., died when it was seven days old; that it was a fine hearty child at birth, thrived, and was quite well till it was about three weeks old, when it first became restless, fretful, cried a great deal, and slept but little. It soon had diarrhœa, the movements very frequent, sometimes greenish and at others thin and watery. It had never refused to suck, but ever since it began to complain, it sucked with difficulty. It had never had spasms or rigidity of the muscles. These symptoms gradually grew worse up to the time I saw it (September 21st). It had been treated by three of the best physicians in the county without any benefit. It was thin, and emaciated to a great degree. Its dejections were frequent, no medicine seemed to have any control over them. It whined and cried and moaned almost all the time, and it slept but little. I explained to the ladies and the father that I thought the depression of the occiput was the sole cause of the disease, and that I thought it might possibly be necessary to perform an operation to place the bone in its proper position. I was obliged to leave, but I requested Mr. K. to go for his physician, and tell him what I said about the case. He went to see my friend, the doctor, and laid the subject before him. The doctor advised him to go home and let the child alone, as he did not believe in any operative procedures in such cases. Nothing more was done, and the child gradually sank, and died about two weeks after I saw it.

CASE 14.—On the 16th October, 1873, I was called to see the child of Mr. C. M. On entering the house I discovered the object of my visit lying in a small narrow cradle on its back. It was emaciated to an extreme degree; crying, whining, and moaning incessantly, and rolling its head continually from side to side. It had the peculiar characteristic trismal

face. The history, symptoms, and appearance of the child will be seen to be the same as those in the case (13) previously related. Before making any examination of the case I said to the aunt: "I think we have here a case of trismus;" and I then explained the nature of the disease, and told her that it depended upon a displacement of a bone on the back of the head. Her reply was: "Yes, we have all noticed a sunken place in the back of the head for several weeks." On examination my suspicions were verified. I found the occiput inwardly displaced to a very considerable extent, pressing deeply upon the brain and firmly held in its abnormal position. I learned that the movements of the bowels were frequent and persistent, that it slept but little, that it cried, moaned, and whined all the time, day and night. As I was satisfied that it was a case of trismoid affection, I took it out of the cradle and laid it properly on its side on a pillow; and the aunt, who had been its only nurse from its birth, gave me the following history. The child, a male, born August 6, 1873, was large and healthy; labour normal. The mother died six days after its birth. The child did well and was perfectly healthy till three weeks old, when it became restless, uneasy, fretful, and cried a good deal. It had lain in the cradle most of the time flat on its back. It was supposed to have the colic, and catnip tea and anodynes were given liberally, but without benefit. The bowels were greatly deranged; the dejections frequent, greenish, and offensive. These symptoms increased in gravity, and the family physician was called in, who prescribed various anodynes and astringent remedies to relieve the pain and check the bowels, but only with temporary effect. A second physician was called in, but with no better result. The patient continued to grow worse, notwithstanding, all the skill of the two accomplished physicians who had seen the case. I was called on the 6th of October. The child was then just two months old, and had been gradually growing worse ever since it was three weeks old. I have never seen an infant so emaciated, being literally a skeleton. It had been sick just five weeks, and, as it was pronounced to be incurable, no physician had seen it for a week, but its aunt had regularly given the anodynes and astringent remedies that had been prescribed for it. I explained to the aunt the nature of the disease, and the treatment, and the necessity of persevering with position for a day or two. I told her that the case was not hopeless, that if the bones of the head did not soon show some signs of rectification, I would puncture the scalp and raise the depressed bone up to its proper place. As previously stated, the child was placed properly on a pillow on its side, and I directed the aunt to turn it from side to side until I should return, which would be in about three days. By that time, I felt confident that the child would be better if position alone could effect the change. If I should find it no better, I proposed to operate and elevate the occiput from its abnormal position. I stated that it was useless to give it any medicine; but that they might give it one grain of chloral hydrate at night to procure a little sleep, and that I thought there was no hope of its getting better until the occiput was raised and the brain relieved of its pressure. The aunt was a very intelligent woman, and followed my directions as to the lateral decubitus literally, although she had but little faith in its doing the good I promised. For the first two days and nights there was no change whatever, but on the third night the great restlessness subsided in some degree, and the child slept several hours for the first time since it was taken, and convalescence set in. I saw the child a few days afterwards; the diarrhœa had ceased entirely, it lay quietly, no fretting, no crying, and

it slept soundly, and took nourishment well. On examining the head I found the occiput occupying very nearly its proper relative position, and the child was well without taking any medicine except two doses of chloral, one grain each on the first and second nights after my visit. But I have no idea that this exerted the remotest influence on the result, for there was no marked improvement till the third night, when the prolonged and persistent lateral decubitus began to produce its effects on the relative position of the occipital and parietal bones. The child is now a sprightly little fellow, and when thirteen months old weighed twenty-five pounds.

The similarity in these two last cases is very marked. Each lost its mother in a week after birth. Each was taken on the 21st day. Each had a similar train of symptoms. Each was reduced to the lowest state of emaciation. Each had the same degree of depression of the occiput, and the same degree of immobility or impaction. I saw each one at about the same stage of the disease. One had no postural treatment, and died a week after my visit; the other had the proper postural treatment, intelligently carried out, and in three days it was wholly cured.

This completes the number of cases that I shall bring forward on the present occasion. I have seen many more, but these will suffice for all practical purposes. There is such a similarity in all of them, their symptoms are so uniform and unvarying, that the repetition of cases becomes monotonous, and I feel that I have already overtaxed the patience of the reader.

I have not classified my cases, dividing them into acute and chronic, or trismus and trismoid, as was properly suggested by Dr. Sims; but I have given them in chronological order from 1851 to 1873

In looking over these cases I find three (5, 10, 12) of acute trismus promptly cured by position alone. Two (7, 8) died without treatment before I saw them. Of the nine cases of trismoid affection, five (1, 2, 3, 6, 14) were cured by position alone; and four (4, 10, 11, 13) died without treatment. The two acute cases of trismus that died without treatment would assuredly have been saved, just as their sister was (case of triplets), if the only and proper method of treatment (position) had been adopted. It is impossible to say what would have been the result of postural treatment intelligently carried out in the four trismoid cases that died.

Taken all in all, these cases seem to me to justify the conclusion that trismus nascentium is the result of mechanical causes; the predisposing cause being protracted or tedious labour, and a too well ossified state of the fœtal cranial bones. The exciting cause is undue pressure on these bones, more especially the occipital; while the immediate cause is undue compression of the medulla oblongata, and the nerves originating from it. The cases so far given are all of one general character, and all go to show that the disease is the result of pressure exerted at the base of the brain. In all of them the pressure was produced by an inward depression of the

occiput, differing, however, in degree from the slightest to the greatest possible.

I may, at some future time, resume the subject, and detail some cases of this disease from pressure on the brain by parietal displacement.

As Dr. J. Marion Sims was the first to give us a correct and rational view of the pathology and treatment of trismus nascentium, I must refer the reader to his interesting and graphic articles on the subject already alluded to. The profession at large have not accepted his teachings on this subject. This is another illustration of the hackneyed phrase that truth travels slowly; but the time will arrive, sooner or later, when the great truths that he announced to the world so long ago will be accepted and acted upon by all in the profession who will observe and reason for themselves.

ART. VIII.—*The Injection of the Bladder.* By E. L. KEYES, M.D., of New York, Professor of Dermatology in the Bellevue Hospital Medical College, one of the Surgeons to the Venereal Division Charity Hospital, etc. (With a wood-cut.)

THOSE members of our profession who, in modern days, have been brought into contact with many and varied forms of bladder disease, have pretty generally come to incorporate injection into the bladder, in one of its many forms, into their treatment of chronic cystitis.

A given practitioner may have this or that substance which he injects in solution and to the action of which he attributes all the benefit derived, as silicate of soda, lead water, solutions of zinc, chlorate of potash, carbolic acid, permanganate of potash, borax, etc. etc., perhaps nitrate of silver; or possibly he may vaunt a special method of topical treatment as being endowed with peculiar virtue; such as double current catheters of one pattern or another, drainage, instruments *à demeure* with occasional injection, irrigation, etc.: some of which methods call for admiration of the patient tolerance of the bladder, and its willingness to get well, sometimes, in spite of obstacles, provided only it be kept reasonably clean.

Now this modern tendency toward relying upon topical measures in treating chronic maladies of the bladder (often to the exclusion of the older-fashioned administration of the preparations of buchu, pareira brava, uva ursi, triticum repens, etc.) clearly indicates that experience has proved the value of the former measures; and the fact that many different substances in solution, and many different methods of getting urine out of the bladder and some fluid into it, are alike claimed as the chief agent in producing the good result—this fact shows there must be some one action,

common in a greater or less degree to all the varied methods, which, mainly, yields the good result sought for. An extended search is not necessary to decide what this one common action of all the methods is; essentially it consists in emptying the bladder thoroughly, and then washing it out, generally with a warm fluid.

Cleanliness then is a chief element in the cure of chronic cystitis. Undoubtedly the heat does good by its soothing influence (nearly all injections are made warm). Unquestionably many astringents, and stimulants, and sedatives, do good at the proper time. They require some care in selection, and may greatly assist the general issue; but the main point must not be lost sight of, namely, that the element of first importance in the treatment of the bladder when in chronic inflammation is its hygiene, and that the corner-stone of hygiene is cleanliness.

In a broad way it may be stated without fear of contradiction, that all chronic cystitis is due to and entertained by a mechanical and a chemical cause; the former, some obstruction to the free outflow of urine; the latter, carbonate of ammonia, liberated by the decomposition of urea, a decomposition sure to occur in any stagnating urine; and carbonate of ammonia has a high degree of power as an irritant of mucous membranes.

This very general view of the etiology of chronic cystitis will bear close scrutiny;[1] it can only be glanced at here, as the object of this paper is, simply, having established the great value of injections into the bladder, to detail the best means of administering the same.

Nor can the mechanical treatment of the mechanical causes of chronic cystitis be more than alluded to here. When these causes can be removed in time, the cystitis gets well of itself; but in the many cases where the cause cannot be eradicated (enlarged prostate,[2] stone too large for removal, neighbouring growth pressing upon the bladder, etc. etc.), often the only real relief the patient is able to find, short of anodynes, is by injections into the bladder, and the amount of good produced by this simple means is sometimes but just short of cure, although the process may have to be continued by the patient indefinitely.

[1] Another element of great value, and one not generally recognized, but which perhaps is important enough to form a trinity with the more conspicuous mechanical and chemical causes, is the nervous element, a certain hyperæsthesia of the deep urethra and vesical neck, probably always present in a greater or less degree, and of which a rather full account has been given in another place. (VAN BUREN and KEYES. *Genito-urinary Diseases with Syphilis*, New York, 1874.)

[2] Another effort toward radical cure of the enlarged prostate has been made by C. Heine, "*Ueber Radicalbehandlung der Prostatahypertrophie*, Archiv f. klin. Chir. 1874, i. p. 79," who claims considerable success (without risk) by means of interstitial parenchymatous injections of the prostate, with small quantities of tincture of iodine.

Finally the scope of this article does not allow a critical consideration of the relative value of the many substances used for vesical injection. In reality these are on the whole of secondary consideration to the subject now under discussion. Where a surface, for example, on any part of the body is discharging pus, the surgeon does not first bestir himself in the selection of a topical application, but the fundamental principle of action is to clean the surface and get rid of anything which may act as an irritant, and then there is time enough to seek for further aid.

The rational treatment of all chronic disease is built upon the foundation of intelligent hygiene. The hygiene of the bladder, when in a state of chronic inflammation, cannot be encompassed except by thoroughly emptying and cleansing the organ, more especially if there be any atony, as is so often the case.

An efficient and easy method of injecting the bladder with warm water, by the patient himself, alone can meet the requirements of many cases of chronic cystitis.

Having thus briefly stated the value of vesical injections, and emphasized the fact that the patient must do his washing for himself, perhaps for a long series of weeks, months, or even years, in order to prolong his life and preserve his health and vigour, it becomes evident that the description of an instrument which a patient can easily manage, and which meets all the demands of the surgeon, is worthy of some care in being prominently brought before the medical public.

The instrument about to be described has nothing in any of its parts which is new. It is a soft rubber catheter, a two-way stopcock, and a fountain syringe; but it fulfils to a nicety all the many requirements of a vesical syringe, whether used by the patient or the surgeon. Dr. Van Buren and myself, after passing it through several modifications, have employed it continuously for more than a year, and now rely upon it almost to the exclusion of the rubber-bag syringe, which was before the favourite. A number of patients are now using the instrument under our direction. In no case has it given rise to any inconvenience, while its application has been uniformly easy and productive of all the comfort that injections can afford. The most bungling fingers of the clumsiest old man can master its simple requirements in one or two lessons, and the expressions of gratitude for the relief it has afforded have been sometimes touching in their earnestness.

Before describing the syringe and its method of use, a glance at a few of the type instruments, both catheters and syringes, which have been commonly employed for making injections into the bladder, will expose the objectionable features of each—features which have led to a search for something better, and objections which do not hold against the present instrument.

All syringes having a piston movement are faulty. The piston is

pretty certain sooner or later to get out of order, and either to become too loose, admitting air, or too tight, requiring force to start it, and then moving in a jerking manner. But, even allowing that the instrument keeps in perfect order, still many an old man cannot use it at all upon himself, to say nothing of comfort. Only with the utmost care can the surgeon drive the piston home without some shock; and any, the least, motion communicated to the catheter by the syringe is felt by the neck of the bladder—the most sensitive portion of the whole tract—the part it is especially desirable not to irritate. Vesical injections would lose half their value as a therapeutic measure, indeed would sometimes be actually harmful, were it necessary that during each injection the neck of the bladder should receive a slight shock. The gentleness with which the injection is executed is a large factor in the value of the procedure. When to this serious objection are added the others, the difficulty an old man experiences in using a piston-syringe upon himself at all with one hand, while he is holding the catheter in the other, and the necessity of refilling the syringe, or at least re-adjusting it for each injection, if several are required to clean the bladder, it becomes evident why the piston-syringe, for use by the patient at least, has been so generally abandoned.

The injecting bag does better, but it has its faults. It is difficult to impress an old man with the unadvisability of throwing air into the bladder, and harder still, in many cases, to teach him how to avoid it. The patient will persist in opening the stopcock too soon, or only partly filling the bag. The trembling hand, so inefficiently aided by the failing sight, makes clumsy work of introducing the pointed nozzle of the syringe into the small opening of the catheter, and the shrunken fingers will sometimes clasp the bag in vain in the effort to expel its contents—for it requires pretty steady and continuous pressure on a bag-syringe to make an injection through a small catheter. The injecting bag, however, is so much more simple than the piston-syringe that it has enjoyed a just popularity.

As for some other means of cleansing the bladder except by simple injection through a catheter, the fluid being allowed to flow out again through the same instrument, but a few words need be said.

Instruments *à demeure* (perhaps left open), through which occasional injections may be practised, inflict unnecessarily prolonged violence upon the neck of the bladder, and are at best desirable only in a very small minority of cases.

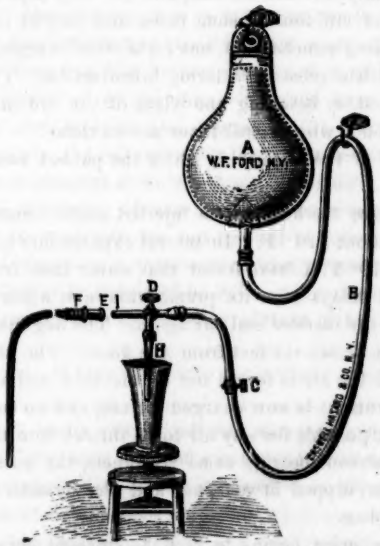
Any means of ordinary drainage, though better than allowing the urine to stagnate, is less good than where injections are employed.

Irrigation, besides the objection urged against instruments *à demeure*, may be accused of the fault which is conspicuous in double-current catheters; namely, that with them it is sometimes impossible to wash the bladder clean.

Double-current catheters of all descriptions have the cardinal defect, namely, that during their use the bladder does not at any time become distended. The stream rushes in through one side of the instrument and immediately out through the other without lifting out from each other the folds of a bladder, perhaps flabby, atonied, collapsed, and in consequence much of the pus and altered mucus lying in small sacculi, and among the folds of the emptied organ, does not come into contact with the cleansing fluid.

To wash the bladder thoroughly it must be somewhat distended.

The figure shows the instrument in all its parts, with a soft-rubber catheter. This latter style of instrument is the best, on account of its softness, in all cases where it can be made to pass, and is eminently suited to most cases of enlarged prostate, that condition most often requiring a continued use of the catheter, and, consequently, of cleansing injections. The latter not only keep down inflammation of the bladder itself, but also ward off any tendency to the local formation of phosphatic calculus.



The simplicity of the instrument[1] as figured is obvious. To the fountain-syringe A B with bag holding a pint, and tube of variable length, so as to allow, if desirable, considerable pressure by elevating the bag, is attached a two-way stopcock D. Upon the tube is another stopcock C, only useful when

[1] The instrument is exceedingly well made by Mr. Ford, with Caswell & Hazard, New York.

it is desired, having thrown a medicated solution into the bladder, to retain it there for a certain length of time without either allowing the bladder to become over-full, or its contents to escape. The nozzle I of the nickeled stopcock D is very large, nearly a quarter of an inch in diameter, and fits snugly into the expanded conical (also nickeled) mouth-piece E. It is so large, and fits so easily, that the most clumsy fingers can readily adjust it almost unaided by sight. Upon this conical catheter mouth-piece is fitted a thin piece of rubber tubing F, covering its upper two-thirds. This allows the mouth-piece to be used with any metallic or other hard catheter, and prevents leakage. The fine conical point of the mouth-piece is to be screwed into any soft catheter before introducing the latter. The other branch H of the two-way stopcock is fitted into a short piece of rubber tubing which conveys the urine and the washings into some convenient receptacle. The catheter (by far the best for ordinary cases of enlarged prostate) is a long, smooth, pink, soft rubber instrument, made in London, by Crohne and Seseman, and marked "Jaques patentee." These catheters are wonderfully soft and smooth, and the only objection to them (except their lack of stiffness for some cases, and lack of calibre for others) is that the eye, being punched out, has no bevelled margin, but is sharp and very apt to scratch unpleasantly during introduction. This objection may be readily removed by bevelling the edges of the eye of each instrument by passing a red-hot wire several times across them.

A brief detail of the manner in which the patient uses this instrument may be useful.

He first prepares the fluid to be injected, eight ounces or more, at a temperature of about 110° F. In several experiments in a room with the temperature at 70° F. I have found that water loses from 15° to 20° F. during the usual delays after its preparation, and while passing through the syringe into the bladder and out again. The bag filled with the warm fluid is hung up about six feet from the floor. The stopcock D is now turned on till all the air is forced out of the tube and a jet of water follows. The instrument is now charged for use, and no subsequent disturbance can make it possible for any air to be thrown into the bladder. Now standing before a stool bearing some receptacle, the patient slowly introduces his catheter, dipped in vaseline,[1] and already attached to the large metallic mouth-piece.

As soon as the urine begins to flow, he immediately couples the large nozzle of the stopcock and the large metallic mouth-piece with which his catheter has been provided, and the urine flows promptly through the short rubber-tube into the vase on the stool before him. When the urine has

[1] Vaseline is better than any other oily substance. It is unirritating, lubricates well, and never becomes rancid; moreover, it does not drop on the carpet or clothes.

escaped, he turns the stopcock D, and the bladder slowly fills. As soon as the organ begins to feel distended, he turns the stopcock again. The simple motion of turning a well-made stopcock does not communicate the slightest jar to the neck of the bladder, while the water flows in and out of the body, obeying the natural law of gravitation, so slowly and quietly that the patient scarcely perceives it.

He may thus wash his bladder very thoroughly four, five, or six times without any change of the instrument or its adjustment, except the simple turning to and fro of a stopcock; and this he does until the water flows comparatively clear from his bladder.

If cold water is to be used, or pressure, or some medicated fluid, this syringe answers as well as in the case of simple washing.

When the surgeon uses the instrument he may roughly calculate how much goes into the bladder in a given time (and, consequently, how much to withdraw when he intends to leave a little in the bladder), by remembering that with the bag hung at six feet, about two-fifths as much fluid will run into the bladder as will flow through the same catheter held at the same height out of the bladder; and in my experiments it has made no difference whether the bladder was atonied or not, about the same amount flowing in a given time into the healthy bladder of a middle-aged man as into the atonied bladder of an old man who could pass only the excess over a residuum of four and one-half ounces.

To sum up concisely, the following are the requirements of a good vesical syringe. The instrument described meets them fully.

1. Simplicity of structure; absence of valves or piston. In short, the instrument should be one which will not get out of order.

2. Capability of throwing a continuous, steady stream, without shock, at a pressure which may be regulated at will.

3. Some contrivance which renders any entrance of air into the bladder impossible.

4. A large nozzle to fit very easily into the catheter mouth-piece without leakage.

5. A smooth, soft, single current catheter with a proper eye.

6. Capability of furnishing repeated successive injections without being refilled, without a reapplication of the instrument, or the necessity of imparting any motion to the catheter.

104 MADISON AV., NEW YORK, Feb. 1875.

ART. IX.—*Case of Intra-Laryngeal Tumour (showing under the microscope mixed characters, principally, however, those of small-cell sarcoma)—in a Syphilitic Subject. Partial Evulsion, Perichondritis, Abscess pointing exteriorly, Fistula of Larynx, Necrosis of Thyroid Cartilage; Tracheotomy; Death; Examination, Post-mortem; Remarks.*[1] By BEVERLEY ROBINSON, M.D., Surgeon to the Manhattan Eye and Ear Hospital (Department of the Throat.)

MICHAEL S., æt. 32, born in Ireland, farmer, 14 years in the United States. When in the United States Army, in 1864, contracted hard chancre. Patient had anti-syphilitic treatment for several weeks after primary lesion was recognized. Since that time rare constitutional symptoms of mild type have manifested themselves.

By careful examination of patient's present condition we have been able to detect but two physical signs of the existence of constitutional syphilis, viz., 1. slight alopecia, 2. a number of enlarged indurated lymphatic ganglia, in different regions of the body. There are no traces of present or ancient syphilitic affection of the integument of the face, trunk, or limbs. As much may be said of the mucous lining of the buccal cavity. Constantly recurring nocturnal pains of osteoscopic character are complained of, and appear to indicate *functional* trouble of specific nature, inasmuch as no tumefaction of bone or periosteum can be detected.

Three years ago patient caught a severe cold, and during five months from above period, has had at times incomplete aphonia. Later, and till a few days before Christmas, 1873, voice remained permanently feeble, and there were few if any intervals when it notably improved. During the latter days of December, 1873, pain localized over region of larynx became a prominent symptom. This has increased somewhat in the past few weeks, and now (May 1st, 1874) is always present. It is made still worse by an attempt to swallow, or a paroxysm of cough. For two or three weeks deglutition has been imperfectly accomplished. Solid substances pass into the stomach with difficulty, and occasionally particles of food get into the larynx, cause cough, and are expectorated for several minutes after a wearisome and insufficient meal is terminated. Liquids are swallowed only after repeated trials, and it is not infrequent to see them rejected in great part through the mouth and nose. The œsophagus is apparently free from disease, and the difficulty of swallowing is due either to the pain which this act occasions, or to loss of healthy function of the epiglottis and pharyngeal muscles, and not to organic obstruction in the passage way of the alimentary bolus. Patient is pale and thin, and has been losing strength daily for about one month. There is, however, no family history which would lead one to suspect tubercular deposit in the lungs, and the signs given by percussion and auscultation of these organs remain wholly negative. The vesicular murmur is partially obscured, it is true, but this is owing to exaggerated sound transmitted from, and which takes origin in, the vocal organ. There is abundant expectoration of white, frothy mucus, and at times the *sputa* are viscous, non-aërated, and resem-

[1] The history of this case, with the accompanying marked specimen of intra-laryngeal growth, was presented to the New York Pathological Society, at a stated meeting, held June 24th, 1874.

ble thick boiled starch. These latter appear to come principally from the pharynx and larynx, as few râles can be heard in the bronchial tubes, and accumulated mucosities are brought into the mouth by an effort of hawking. After slight physical exertion of almost any kind (walking, talking, etc.), respiration becomes noisy, and in a measure difficult, and dryness of the throat is on these occasions a symptom which causes much annoyance. The voice and cough are now broken, husky, and imperfect, and have lost much of their normal strength and pitch. In a word, our patient is incompletely aphonic.

Larynx.—The interior of this organ offers a diseased appearance in its entire area. This aspect, as shown with the laryngeal mirror, is, as nearly as possible, expressed by the term *fungoid*. First, and most prominently, there is a large, pinkish, mammillated growth situated on the right side of the larynx.[1] This growth fills up about two-thirds of the superior opening of the larynx, and has a broad base attached to the greater portion of the right ventricular band. It extends as far forward as the anterior commissure, but leaves a small orifice behind its margin and the posterior commissure. The size of the growth is about that of a very small hazel nut, and conceals from view in great part the right vocal cord. The mucous membrane covering the arytenoid cartilages is red and swollen, and the submucous tissue infiltrated. Upon the superior surface of the right arytenoid cartilage is a single ulceration. Below the left vocal cord is a second neoplasm as large as a lentil, irregular in outline, aad apparently of similar structure to the one first described.

It springs from the left side of the cricoid ring. The vocal cord and ventricular band on the left side, have a pinkish coloration, and in their entire extent a mammillated appearance, with numerous points where evident ulcerations are situated.

What was the vocal cord and ventricular band on this side, viz., the left, is now covered with, or included in, morbid tissue. The posterior commissure is very much thickened.

Such was the condition presented by the interior of the larynx during the ordinary movements of inspiration and expiration. During an effect of phonation the first and larger growth obstructs the lumen of the larynx completely and presents the approximation of the vocal cords, or, more properly speaking, the layer of morbid tissue in which these fibrous bands are comprised. Both arytenoid cartilages rotate partially, and so far as they are doubtless able to do, having in view the mechanical obstruction due to the presence of a tumour on the right ventricular band, and having also the thickened condition of the index-arytenoid commissure. The crico-arytenoid articulations are not, therefore, if we consider the evidence furnished by the laryngeal mirror, in a diseased condition.

Treatment.—Inhalation tinct. benzoini comp. (℥j-℥j) several times in twenty-four hours. As nourishment a thick mixture of essence of beef, yolk of eggs, and oatmeal porridge.

May 5. Patient admitted into the Manhatten Eye and Ear Hospital. On this and following days, several partially successful attempts were made by my friend and colleague, Dr. Andrew H. Smith, and by myself, to tear away the larger of the two growths in the larynx. Bits of the

[1] The exact point of origin of the neoplasm could not at first be determined, but in later examinations it was seen to arise from the right ventricular band. The necropsy confirmed the accuracy of this diagnosis.

growth were brought away by one of us on these occasions by means of Mackenzie's antero-posterior cutting forceps. The successive operations were well supported, caused but moderate pain and little or no hemorrhage subsequent to the evulsion. Anti-syphilitic treatment was employed, viz., frictions over region of larynx with unguent. hydrarg. and administration of potass. iodidi externally. Applications of cupric sulph. (gr. xv–℥j) and insufflations of iodoform were made more than once, and apparently with some good effect, to the interior of the larynx.

12*th*. Has evidently improved; deglutition is more easily performed and without being followed, as a few days since, by regurgitation through the mouth or nasal passage. The breathing, which previously became noisy after the slightest exertion, is now more tranquil under similar conditions. The voice is somewhat stronger; localized pain has not diminished, and on examination of the region of the larynx, considerable redness and tumefaction are seen, which we ascribe to irritation caused by the mercurial frictions. These latter were stopped, and poultices ordered to be applied and frequently renewed; the size of larger growth has considerably diminished, and at present more than one-third its original volume; the pulse continues weak and accelerated; the thermometer in the axilla was found to mark 100°.2 Fah. (May 5th), and has varied but little since.

23*d*. Patient having failed to show himself at hospital, he was visited to-day at his house by Dr. A. H. Smith and self, and found ill in bed; he is very weak and much emaciated; has suffered from diarrhœa, which happily is now arrested; for seven days he has been able to take very little nourishment, owing to extreme soreness over laryngeal region; during afternoon he was again transported to Manhattan Hospital in a carriage; on his arrival there attempts were made to examine the larynx; on account of great intolerance of mirror the inspection of the vocal organ was imperfect; yet it was evident that the upper orifice of the larynx was still considerably obstructed by what remains of the growths already described, by neighbouring thickening of mucous membrane and by submucous infiltration; discharge of muco-purulent character lines the interior surface of the larynx.

Externally, an abscess of considerable volume was immediately recognized. It was situated over region of thyroid cartilage, and pointed somewhat towards median line. When opened by a vertical incision one-half inch in length, two or three teaspoonfuls of fetid sanious pus came out, or were pressed from the interior of the pyogenic cavity. Mingled with the pus were several air globules. The existence of these latter was explained by the decomposition of pus, which doubtless had its origin in the perichondrium covering the thyroid cartilage.

With the probe considerable burrowing on the left side of the neck (two inches) was made apparent. On the right side there was less separation of the skin from the soft parts beneath; no necrosed points of cartilage were discovered after a tolerably thorough examination; a strip of lint was introduced by the external opening of the wound, and instructions were given that the cavity should be washed during the evening with carbolic lotion. The incision of abscess relieved patient of much pain. Beef-tea, milk, egg, brandy, were prescribed in such quantities as patient might wish to partake of them.

24*th*. Breathing is frequent and noisy, but without great difficulty or oppression; passed a restless night; with probe necrosis of thyroid cartilage in neighbourhood of anterior insertion of vocal cords is discovered,

and after some search a point where there is a small orifice communicating with the interior of the larynx; introduction of probe by this orifice occasions a paroxysm of painful cough. When patient closes his mouth and nose he can blow air from lungs through the fistulous opening; skin is still hot; pulse 108; less fever, however, than yesterday; moderate discharge of fetid pus from wound; diminished soreness on pressure; skin has adhered in part on both sides of wound to soft tissues beneath; cough very troublesome; expectoration at times of muco-purulent sputa, tolerably tenacious, and again of a white, frothy liquid; less viscous and adherent. There is but little blood mingled with sputa; milk taken was vomited as a heavy, solid coagulum. Ordered liq. morph. sulph. ℥j at bedtime, to be repeated if necessary. Mist. expect. (ipecac, acacia, etc.) ℥j occasionally when the cough is troublesome; liquor calcis mixed with milk (℥ss–℥iv), jelly, port-wine, egg, milk, beef-tea, etc.

26*th*. Temperature 101°.2 Fah.; pulse 112; expectoration easier; passed a good night; taken a tolerable amount of food; fistula patulous, as yesterday. When patient coughs, air passes freely by orifice. Ordered suppositoria c quinæ sulph. gr. iij three times a day.

27*th*. Pulse 108; weaker; coughs continually; abundant viscid expectoration; has taken very little nourishment; great thirst; one motion of bowels; cold, clammy, and very excessive perspiration.

31*st*. During the evening the patient was suddenly attacked with intense dyspnœa. Dr. A. H. Smith, who was immediately sent for (as I was absent from the city), found patient breathing with less difficulty than he had done a short time previously. Deeming it prudent, however, to prevent a possible recurrence of dyspnœa, and the hour (11 o'clock P. M.) being unfavourable for a major operation, he enlarged the wound somewhat, and excised a small portion of the left thyroid ala, where it was necrosed. Patient breathed more easily after the operation, and passed the night with relative comfort.

June 1. About mid-day patient took ether. So long was he in being sensibly influenced by it, that a moderate proportion of chloroform was used so as to produce complete anæsthesia. The operation of tracheotomy was then successfully performed by me, aided by Dr. Smith. No large vessel was divided. There was, however, moderate hemorrhage after the introduction of the canula.

2*d*. Doing about as well as could be expected yesterday afternoon; the expectoration alone, by its abundance, giving legitimate cause for immediate anxiety. He passed a restless, feverish night, and enjoyed little or no sleep. No nutriment was taken, so great was the pain occasioned by the effort of deglutition. This morning at 5 o'clock A.M. the canula became stopped up with viscid phlegm, and patient was nearly choked to death before efficient aid could be given by the nurse in attendance. The canula caused much pain, and liquids, when swallowed, pass into the larynx and trachea in part, and are thrown back after cough or violent expiration through the wound and tracheal tube. Pulse is irregular and very feeble; respiration very frequent. Since early morning has taken but a small quantity of beef-tea and milk.

3*d*. Yesterday in the afternoon a consultation was held with Dr. A. H. Smith, and it was determined that the operation of thyrotomy should be performed, and that after complete separation of the alæ of the thyroid, the interior of the larynx should be rid, so far as possible, of the morbid growths contained therein; that explorations should be made to find out

the exact situation and limits of the processes of necrosis, and that whatever portions of dead cartilage were to be got at, without increasing the already very serious condition of the patient, should be removed, and that afterwards, supposing no incidental circumstances were to arise and counter-indicate such treatment, the canula should be withdrawn, and the implicated parts brought together by means of stitches. Such was the plan of procedure adopted after much reflection, and it was, in reality, the only one left us if we were not prepared to stand by quietly, and see death follow surely and promptly.

Unfortunately the impressibility or weakness of the patient was such that we found ourselves obliged to forego carrying out the above indications.

On two successive occasions, all proper precautions being exercised, an attempt was made to bring the patient under the influence of chloroform. Inasmuch, however, as alarming symptoms manifested themselves after but a few inspirations, the inhalation was considered too hazardous to be continued. The idea of any further operative measures was then definitely abandoned, and it was believed that, if persisted in, they would cause an immediately fatal result to the patient.

The pulse and respiration increased in frequency during the afternoon and evening, the patient taking little or no nourishment of any kind. His strength failed him more and more, and, sinking gradually, he died at 11½ o'clock P. M. (June 2d), the proximate cause of death being the clogging up of the smaller bronchial tubes by an excessive amount of muco-purulent secretion.

Necropsy (June 3d), fifteen hours after death, was confined to the larynx, as circumstances did not admit of further examination. Upon dissection of soft tissues, so as to separate the larynx from the adjacent parts, and take it out completely from the cadaver, no burrowing to any extent in cellular tissue under the skin was remarked, and apparently the cavity of the abscess, opened into some days previously, had become almost if not entirely obliterated. After separating the intrinsic muscles of the larynx in front from the alæ of the thyroid cartilage, a considerable part of the right ala, in the neighbourhood of its lower margin, was found to be without perichondrium; bare and rough to the extremity of the probe. In fact, there was evidently a condition of necrosed cartilage at this level. On the right side the soft tissues presented a greenish aspect, due to putrefactive changes. In this direction, also, there was distinct proof of fistulous burrowing previous to death. The left ala was less diseased *in front* than the right, and no portion of this region was bare, or showed detached perichondrium. The fistulous orifice communicating with the interior of the larynx, which had spontaneously shown itself before death (after incision of the abscess mentioned in the history of the case), and which had been enlarged by Dr. Smith, was situated just on a level with the anterior attachment of the vocal cords and ventricular bands. The larynx having been laid open from behind on the median line, a good view was obtained of its interior. The following is an accurate description of its appearance: The free border of the epiglottis was but little affected. It was free from ulceration, and only very slightly thickened. Considering the age of the patient (thirty-two years), the yellow coloration of the fibro-cartilage was more apparent than usual. The base of the epiglottis—and, in fact, the general aspect of the larynx when looked into from above—to be expressed by a term which nearly

approaches accuracy, is *fungoid*. So true is this word to the idea in the mind, that the question immediately suggests itself, have we not here a malignant growth of carcinomatous structure? To particularize—the inferior two-thirds of the epiglottis, the ary-arytenoid folds, the posterior commissure, and the mucous covering of the arytenoid cartilages, are all much thickened, and offer a very light pinkish coloration. At the base of the epiglottis, to the right, is a round, somewhat mammillated growth about the size of a large pea, adherent to the mucous membrane by a broad base, of almost equal diameter to the prominent portion of the growth. The rest of the posterior surface of the epiglottis which we are considering, viz., the inferior two-thirds, presented mammillary elevations due to smaller pathological formations of same nature with the preceding, alternated with depressions occasioned by ulcerations of lenticular configurations. One of these presented a yellow fundus, which was none other evidently than the fibro-cartilage of the epiglottis. The ary-arytenoid folds and mucous membrane lining the arytenoid cartilages presented several points of ulceration.

One of these ulcerations, isolated and very distinct in outline, is situated on the superior aspect of the mucous membrane covering the right arytenoid cartilage. Lower down, what remains of the growth spoken of in the history of the case, is distinctly seen to take its origin in the right ventricular band, and to cover over and conceal from view almost entirely the right vocal cord.[1] The left ventricular band and left vocal cord are very indistinct in their outline and barely distinguishable, on account of infiltration of their mucous lining, with deposit of similar structure to what forms the neoplasms described. The lumen of the larynx is diminished, but not sufficiently to account by itself for the intense dyspnœa which came on suddenly, during the evening when Dr. Smith enlarged the fistula of the larynx.[2]

At the posterior wall of the larynx, and on either side, is a fistulous passage which extends for some distance amongst the soft tissues which laterally are in relation with the cricoid cartilage. This cartilage is much diseased in the superior half of its posterior wall.

Upon section this portion presents a dark-brown coloration of the cancellated portion of what has evidently become transformed into osseous structure. From this portion of diseased cartilage the fistulous orifices and trajects mentioned, take origin. The lower half of the cricoid cartilage appears healthy.[3] Below the inferior border of the cricoid cartilage the tracheal wound is visible in the median line. The mucous membrane at one point to the right and behind—on a level with the inner extremity of the canula—is ulcerated, and offers evident marks of inflammatory processes in the immediate neighbourhood. Elsewhere the mucous membrane of trachea shows numerous congested spots. One or two of the tracheal rings, especially on the left side, for about one or two lines, are broken and

[1] Before evulsion was commenced, this growth extended below the right vocal cord.

[2] This dyspnœa is doubtless sufficiently explained by sudden spasm of the adductor muscles, or else by sudden obstruction of the calibre of the larynx, with viscid and purulent secretion, coming from the bronchial tubes.

[3] The point of origin of disease of cartilage, as perichondrium is not evident. Did chondritis, as perichondritis develop itself first in thyroid, or cricoid cartilage? Impossible to affirm positively from ocular examination.

bent backward into the tracheal passage and the wound of the trachea, though on the median line and made with a single incision of the bistoury, is irregular on its margin—as if notched, and a portion of the tracheal rings had been removed, by two or more incisions, made in different directions.[1]

Note.[2]—Appended to this microscopic examination, are the characters discovered with the microscope, and which have been given me by CHARLES S. BULL, M.D., Pathologist to the Manhattan Eye and Ear Hospital.

"The growth is mostly of a fibro-cellular structure with the cells largely predominating—in fact there seems just enough of fibrous connective tissue present to hold it together except towards what looks like the base of the tumour, where it is somewhat more abundant. Only in isolated spots on section did I meet with any epithelial cells covering the surface. The mass of the growth is composed of small, round, nucleated cells, with granular contents, about size of a pus corpuscle. There were some few fusiform, or caudate cells scattered through the tumour, and near the base they were quite numerous, being arranged together as we see them in a true fibro-cellular growth. There were some larger ovoid cells, few in number, about twice or three times the size of the round cells, with nucleus and nucleolus. The numerous bloodvessels proved the growth to have been somewhat vascular. I could not find any remains of glandular tissue, and though the tumour resembles very closely a lympho-sarcoma, yet there were spots, or vacuoles, which we meet with in the papillomata, which were filled with a homogeneous mucous matter, giving the appearance of a myxo-sarcoma. The centre of each piece of the tumour was much softer than the outside."

"To sum up the examination, I should call the growth a small-cell sarcoma, towards the base being of the fibro-cellular variety, while the rest of the growth is of a myxo-sarcomatous character."

Subsequently a communication was received from Dr. Bull, as follows:—

"The perichondrium was very much thickened, and seemed to be much denser in structure than is usual. The cartilage itself was very hard, and to the touch and naked eye gave the impression of being ossified. A microscopic examination showed a very marked hypertrophy of the connective tissue of the perichondrium, and a very general infiltration by the same round and fusiform cells that existed in the neoplasm. The vascular development was marked, and in some spots there occurred masses of pigment of irregular shape and size, lying free in the connective tissue, while occasionally some was found inclosed in the cells."

Remarks.—There are several points of undoubted interest connected with the above case. And this interest is at once practical and theoretical; practical, inasmuch as the question of diagnosis and treatment

[1] We would draw attention to the fact, that the smaller growth situated under the left vocal cord, of which we speak in the history of our case, is not mentioned in the microscopic description, as made after death, and with the morbid specimen before our eyes. This smaller growth is no longer visible. What has become of it, we cannot assert positively. Was it torn away in great part, in our last operation within the larynx, by means of the laryngeal forceps, and what remained behind, afterwards expectorated with secretions from the bronchial tubes? Such is the probable explanation, and we remember to have seen a like phenomenon occur in an analogous case.

[2] The other organs could not be examined, owing to opposition met with on the part of relatives of the deceased.

should be considered; theoretical, because such a case is rare in some respects, not to say unique, and leads one naturally enough to propound certain questions, the answers to which must be more or less based upon hypotheses, and not, as we could earnestly wish, upon the fair interpretation of many similar or analogous facts. First, with regard to diagnosis; when we had thoroughly examined our patient, and had duly considered his previous history and the signs presented in his person, we came to the conclusion that the intra-laryngeal growths were of a syphilitic nature, and required specific treatment. Acting upon this idea, mercury and iodide of potassium were immediately put in requisition, and administered after what seems the most rapidly efficacious manner; but apparently with no result, so far as arresting any threatening symptoms or producing resorption of tissue was concerned. And here, to be candid, and in making our acknowledgment give a lesson which may prevent others from being guilty of like neglect, we should say that a microscopic examination of the portions of growth brought away with the forceps was not made till death supervened. In some cases such oversight or negligence might prove detrimental to the patient's future cure. In the one we are considering, we do not believe that the treatment should have been modified had we been aware in advance of the revelations which the microscope made known to us after death. The syphilitic infection was affirmed by the patient, and further corroborated by some few signs found upon his body at the time he put himself under our care. In a like position we would ever feel disposed to make use of specific remedies in properly managed doses, until one of two circumstances might arise: first, a manifest *intolerance* should show itself to the medication employed; second, a wholly *negative* action were to be made evident. In either of the above alternatives we would abandon, naturally enough, the method first adopted, and seek after a wiser and more efficacious manner of treatment. Had no signs at all of constitutional syphilis been visible in the case reported, or which we could fairly attach to its existence, still we believe that looking merely at practical results, anti-syphilitic treatment was the one at first indicated. On more than one occasion already we have known of or seen patients who, with a past history of an indurated sore, have never from that time forward offered symptoms which a well-informed practitioner would feel justified to term syphilitic. At a given period, however, morbid signs became apparent in some organ or tissue of the frame, against which divers therapeutic agents were tried in vain. Specific remedies were then employed, and rapidly beneficial results have followed their use. The influence, it is true, of a constitution tainted with syphilis in becoming the source, as it were, of laryngeal growths in general, has not as yet been accurately determined. Some whose names we could cite, whose authority stands highest on this subject, would have us believe that polypi of the larynx are no more frequent in syphilic subjects than in others. On the

other side, we find those who affirm that syphilis has a direct and evident influence in producing laryngeal growths. With these latter, sarcomatous and other malignant growths are apparently no more excluded from manifesting this influence than are papillomata with a like situation.

For us who believe in the utility of specific treatment in *some* cases, where legitimate doubt may be attached to its existence, if symptoms alone be considered, the wisdom of its adoption is not assailed by any revelations made with the microscope. In considering the diagnosis, the question was asked whether or not our case was one of laryngeal phthisis. It was at once eliminated. The family history of our patient was more than usually good; no member of it had ever suffered from any serious affection of the chest, and the aspect of the larynx, as shown with the small laryngeal mirror, was such as to do away entirely with even a suspicion of that condition. True it is that the great emaciation of the patient during the last few weeks of his life, his abundant expectoration, and occasional complaints of pain in the left side of the chest, were symptoms which might have occasioned anxiety with regard to the condition of the lungs. But there were so many signs, both physical and rational, absolutely wanting in order to permit one to pronounce the word tubercular with any degree of probability, that the mere idea was never for any length of time entertained.

A few cases analogous in many respects to our own have occurred in the practice of Mackenzie, Türck, Cohen, etc., and it may very plausibly be sustained that a professed specialist in throat diseases is bound to be familiar with these examples, and prepared to encounter and recognize similar ones. And further, it may be added in a general way, that if medicine shall ever be ranked amongst the exact sciences, such trust can be hopefully cherished by her votaries only when exact observation of every fact, clinical or experimental, becomes for them an imperative law. When, however, there is a dearth of special facts, and detailed histories of those placed on record are wanting, allowances can properly be made for not detecting features of a portrait at no time fully drawn. Such, in a certain measure, is the story thus far of sarcomata of the larynx. The symptoms peculiar to them are not fully known, and according to Paget "it would be wrong to draw many conclusions from so small an experience as yet exists of these tumours." Mackenzie states in his work on laryngeal growths (London, 1871), "fasciculated sarcomata constitute a variety of growth, which is comparatively unfrequent in the larynx, only three cases having come under my notice, and there being but six amongst the cases treated by other practitioners." So far as we are aware, no other case of similar structure to those just mentioned has been recorded since. If we may put faith in our researches, we should be allowed to assert that our own case is rarer still, for we have not been able to find a single case of small-cell sarcoma of the larynx (and this is mainly the microscopic

feature of the growth so accurately described by Dr. Bull) reported in any one of the late medical publications. With one exception, too, all the cases of spindle-cell sarcoma mentioned in Dr. Mackenzie's exhaustive treatise occurred in patients older than ours.

Beside, the symptoms manifested by our patient up to a very late date were hardly such as to justify a belief in the presence of *any* kind of malignant growth. And here the microscope would appear to be at fault, for it "cannot be relied on for differential diagnosis." "Several cases have come under my notice," writes Dr. Mackenzie, "where the histological features were decidedly those of cancer, whilst the clinical history was of a totally opposite character, and *vice versa*." The above remarks and citations absolve us fully, in our estimation, for not making the diagnosis of *small-cell sarcoma* in our case previous to death. In the instance related, the course of disease cannot be considered very remarkable. Where chondritis, or perichondritis, has followed trouble of a purely inflammatory character, or what is more frequently true, ulcerations caused by laryngeal phthisis, or by syphilis, we read that the abscesses formed, in the majority of cases, point inwards. Sometimes, however, as in the case reported, pus is found in the neighbourhood of the external perichondrium of the thyroid cartilage, and finally makes an exit for itself by a fistulous opening through the integument. It frequently happens also, as in our case, that the surgeon in charge, by a timely incision, allows the abscess to empty itself many hours before it otherwise could.

This is the prudent course to adopt, for in this way and through proper after-treatment the disease of the cartilages may be prevented from extending, or a permanent fistule opening exteriorly (the consequence of blamable procrastination) be entirely avoided.

The abscess pointing outwards appears to us a more desirable state of things than the condition where it becomes prominent internally, and is readily visible with the aid of the laryngeal mirror. Then great dyspnœa and occasionally suffocation are produced before the abscess bursts or is opened. Subsequently, as we are aware, there is imminent risk of life resulting from sudden obstruction of the larynx or trachea by a piece of necrosed cartilage, unless the whole of the diseased portions be removed, and this very often is an almost impossible task. In a case related by Rokitansky, which has become famous, the anterior perichondrium of the thyroid cartilage had become affected, an abscess formed in the subcutaneous tissue which gave rise to a fistule, and emphysema of the neck ultimately followed.

We happily enough had not occasion to observe this unfortunate consequence of a similar condition with that noted in our case. Whilst in this latter the mobility of the epiglottis was much impaired, as proved by the particles of food which entered the larynx, we did not perceive "the deep

red, shiny colour," nor "a much enlarged, elastic swelling of the epiglottis" as described by Tobold, "when the thyroid cartilage is attacked."

Our history is then an exception to a rule admitting of but few. The post-mortem examination has proved to us that had we been able to carry through our purpose, when thyrotomy was determined upon, we would not have been able to take away the whole of the diseased parts without extirpating the larynx.

In view of the late unique case of Professor Billroth, where the larynx of a patient suffering from malignant disease of this organ was successfully extirpated, we may ask, would this operation have been justifiable in our own case? We do not believe it would. When thyrotomy was contemplated our patient was very weak, so much debilitated in fact that the propriety of laryngotomy could not be immediately resolved upon. The chances then of his surviving a more radical operation, and of necessity one in which considerable loss of blood must have been the consequence, were infinitely small. Even had his general strength been greater, we do not at present feel that it would have been indicated. For if we have regard to the very little, if any, permanent improvement in his breathing which followed tracheotomy, and consider the nature of the laryngeal growths, there is good reason for believing that secondary deposits had already been made in the lung tissue, which would have made ultimate cure an impossible result. And now if we examine carefully the experiments of Czerny (1870) on dogs, and the later more startling experiment of Prof. Billroth on man, we do not feel fully persuaded that extirpation of the entire larynx is as yet an operation which should be performed on the human subject in any case.

All the dogs operated upon by Czerny died within a short period of time subsequent to its performance, and by the last accounts from Vienna, recurrence of malignant growths in the bronchial tubes of Prof. Billroth's patient was rumoured abroad, and believed in by many of those best informed about matters in the Allgemeiners Krankenhaus.[1]

We do not desire to place an absolute damper upon the spirit which dictates such hazardous surgical methods, but we would have it properly tempered with thoughtful reasoning, in regard to intercurrent and future suffering and dangers, to the poor fellow subjected to very bold personal initiative.

In surgery, as in most other things, it would be well in practice not to allow the golden rule to become obsolete.

Finally, we wish to consider some point in connection with the morbid anatomy of our case. The growths had their origin doubtless in the submucous layer, and afterwards implicated on one side the mucous membrane, on the other the perichondrium of the cartilages.

[1] Since writing the above, Prof. Billroth's patient has died of lung disease of carcinomatous nature.

They are of undoubted malignant structure, which is shown partly by the number of small cells that enter into their composition, partly by their soft consistence and vascular nature.

More malignant are sarcomata of this kind, according to Virchow, than those of firmer consistence where fusiform cells greatly predominate. One of the characteristic clinical features of all varieties of sarcoma is to extend locally in the tissue, as matrix where they have first taken root, and to recur, more or less *in situ*, after removal.

These facts will account for the appearance of the larynx internally, where nearly the entire mucous lining and submucous connective tissue were incorporated in the sarcomatous growth, and for the differences which exist in the description made of it before and after death.

But the malignancy of sarcomata is not alone made apparent by their great tendency to extend locally; they are also rapidly reproduced in the internal viscera. Transmission takes place through the bloodvessels, and the small cells make their way more readily into the bloodvessels than the larger fusiform cells. In no one of the internal organs do they reproduce themselves more frequently than in the lungs. Our belief, therefore, that the lung tissue of our patient was already invaded at the time of his death, with secondary growths, would appear to be highly probable. The lymphatic vessels and ganglia are rarely infected. This differentiates sarcomata with cancers, properly speaking, where dissemination takes place by the lymphatics—at least in the earlier stages of the disease.

Let us note that, in the history of our case, mention is not made of the lymphatic vessels or ganglia of the neck.

Our attention, in fact, was not directed towards them for the simple reason that they were seemingly in a normal condition.

The condition of the perichondrium and cartilage of the larynx should attract particular attention, because—1st, the apparent ossification of cartilage to both eye and touch is noteworthy when we consider the relative youth of the patient (thirty-two years)—for though ossification of cartilage is not infrequent, as we are well aware, yet it usually becomes evident at a more advanced age. In this instance our belief was (till histological examination made us sceptical), that this change had been rapidly produced by, and was wholly due to, the inflammatory processes, which will in older patients bring about such transformation after a brief lapse of time.

But after the revelations of the microscope that a portion at least of the cartilage, and more particularly the posterior portion of the cricoid ring which had a brown coloration, was infiltrated with sarcomatous cells and interspersed with masses of pigment "lying free in the connective tissue, while occasionally some were found inclosed in the cells," we were and are in doubt.

We do not know how far the growth itself may have been the cause of this change.

2d. Pathologists have thus far been of the opinion that sarcoma does not invade cartilaginous tissue. Our case distinctly proves the error of such absolute assertion.

Further: This question presents itself: Did the laryngeal growth have its origin in the mucous or submucous layer (as is very common, and as we have taken for granted in these remarks already before receiving Dr. Bull's later communication), or did it really begin in the cartilaginous tissue, of which many of the normal cells were found to be atrophied or to have disappeared altogether?[1]

The reply to this, it is perhaps impossible to give at present in a very decided manner. Still the great thickening of the perichondrium, and hypertrophy of its connective tissue, the density and resistance of the cartilage itself, taken in connection with "the marked vascular development and general infiltration of the same round and fusiform cells that existed in the neoplasm," render the latter hypothesis, to our mind, more than probable.

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ART. X.—*Epithelioma of the Larynx; Stricture of the Œsophagus, Ventral Hernia, Abdominal Tumour, and Pendulous Belly; Operation; Death.* By SAMUEL C. BUSEY, M.D., one of the Physicians to the Children's Hospital, and Physician-in-charge of Diseases of Children at the Columbia Hospital Dispensary, Washington, D. C. (With two wood-cuts.)

IN June, 1874, I was requested to see Mrs. M., widow, white, æt. 74, who was suffering from complete aphonia and dysphagia. The aphonia had its beginning in a severe cold four years previously, slight at first, but gradually and continually growing worse, became complete during the winter of 1873–74. The dysphagia, now so complete that but little solid food could be taken, and only very slowly and with very great difficulty, began long after the loss of voice, and only seriously interfered with the natural function, during the past six months. Dyspnœa was very marked. Inspiration and expiration were noisy and laboured, yet oxygenation seemed complete. She weighed about 200 pounds, was very fat, could walk but a few steps without assistance. Complains of loss of power in the lower extremities, and inability to maintain the erect posture, yet usually sat most of the day in an easy chair, and slept comfortably in a semi-recumbent posture. Appetite good, and notwithstanding the difficult deglutition,

[1] Oral communication from Dr. Bull.

she took sufficient food. Was cheerful and very anxious to be cured of the aphonia, which a physician had informed her was due to thickening of the epiglottis and would eventually prove fatal. For a number of years she had suffered from ventral hernia, and recently, in consequence of a sudden attack of severe pain to the right of the umbilicus, had discovered a tumour in the abdomen. It was hard, movable, oblong, very firm, and but slightly sensitive. To these unfavourable symptoms were added the annoyances of a pendulous belly, which hung in an immense fold over the pubis, subjecting her to the constant irritation and excoriation of the opposing cutaneous surfaces.

A few days subsequent to my first interview, accompanied by my friend Dr. Charles E. Hagner, a laryngoscopic examination was made, resulting in the discovery of a tumour attached to the right vocal cord. The patient insisted that an effort should be made to remove it, and assured us she was quite equal to the undertaking. Having removed to the country for the summer, we decided to defer any operative procedure until her return to the city. During the months of July and August, the dysphagia and dyspnœa gradually increased, the latter seeming occasionally to be somewhat ameliorated under the treatment with astringent atomization, but the dysphagia progressed uninterruptedly until only liquids in very small quantities, a few drops at a time, could be taken with very great difficulty and very slowly. Attempts to swallow usually produced violent and alarming paroxysms of dyspnœa. About August 20th, she was seized with bronchitis, which under treatment by inhalation improved, but never entirely subsided. From this time she lost strength and flesh rapidly, and the paroxysms of dyspnœa became so frequent that her friends insisted that some effort should be made to relieve her suffering.

September 9th, I invited Dr. Drinkard to see the patient with Dr. Hagner and myself with the view of revising the diagnosis, and to determine the proper remedial resource. The growth springing from the right vocal cord, ulcerated at its apex and perhaps malignant, was readily recognized, and the conclusion was unanimous that laryngotomy or tracheotomy furnished the only hope of relief. It was deemed injudicious to make any attempt at operation through the mouth, because of the irritability of the fauces and pharynx, her enfeebled condition, and the manifest danger of asphyxia. The expediency of an immediate attempt to extract the tumour, after relieving the respiration by either of the proposed operations, was held in abeyance. The friends of the patient were fully advised of the certainty of death unless perchance success should crown the attempt, of the imminent danger attending the operation, of the more than probable failure of securing any permanent relief, and that there was but the bare hope that her distressing breathing might be relieved, and if nutriment could be supplied, life might be prolonged. On the 10th, Dr. Drinkard performed tracheotomy, a description of which I give in his own language.

"By the courtesy of Dr. Busey, I was entrusted with the operative manual in the case forming the subject of his present paper, on the afternoon of September 10th, assisted by himself and Drs. Eliot, Mackall, Hagner, J. T. Young, W. W. Johnston, and Ramsey—all of these latter gentlemen having coincided in the propriety of tracheotomy as a last resort for prolonging life, and as affording a possible chance for further operative interference in case circumstances should be found to favour it. With this idea in view, it was at first determined to make the incision—that of laryngotracheotomy—extending it through the cricoid cartilage and the upper

rings of the trachea—a plan modified from the necessity of the case during the operation—as will be seen. The general sentiment of the gentlemen in consultation being against the use of any anæsthetic, none was employed. The cutaneous incision having been made, corresponding to that desired to be made in the larynx and trachea, the subcutaneous tissues were found to be of unusual depth—the neck of the patient being short, thick, and fat—and the vascular engorgement was so considerable that each attempt at dissection or incision of the tissues was followed by a profuse flow of venous blood, washing the parts and retarding the operation to a very annoying extent. The evidently insignificant laryngeal breathing space possessed by the patient, and her actually advanced condition of slow asphyxia, rendered it essential to guard, if possible, against any considerable influx of blood through a tracheal opening; and the clearing away of the tissues over the trachea was proceeded with very slowly, the flow of blood being controlled at each step so far as time permitted. The trachea having been finally denuded, and the hemorrhage apparently checked, an incision was made through the two upper tracheal rings—it being considered that there was a better chance of completing the incision rapidly, by making the lower part first and extending it upwards, than by commencing it at a cricoid cartilage possibly well advanced towards ossification. Theoretically correct, this method of incising was within a very little of causing the patient's immediate death. At the moment of penetrating the trachea, the usual convulsive and deep respiratory movements took place coincidently with the unloading of the venous turgescence about the parts, and a literal inundation of blood over the dissection and into the tracheal opening—the only guide to which now was the hook in the crico-thyroid membrane. The sudden and excessive hemorrhage, with the struggle of the patient at the moment of suffocation, precluded the idea of any deliberate attempt at enlarging the incision upwards—the patient being to all intents and purposes perfectly lifeless—the point was to get the tube in by enlarging the incision in any way possible. This was done in a direction downwards, and as the patient was being raised up in bed by the assistants. Guided by the trachea-hook the knife was carried into the first opening (as was thought really by the side of it), and the incision prolonged downwards through the trachea.

"Calculation having been made only for the passage of the knife and not for the necessary movement of the patient, it was evident, as the tube was passed in, that the tracheal opening was much longer than intended; though, as demonstrated afterwards, hardly too large for the requirements of breathing. During the few moments necessary to complete the operative manual as described, there was that amount of condensed anxiety which has no need of description for those who have witnessed moments of suspended animation during surgical operations. Until the tube was fairly in the trachea, and a few vigorous movements of artificial respiration had cleaned this latter of the blood that fairly filled it, the patient's life was not only questionable but actually in abeyance; and nothing but the prompt and perfect co-operation of the gentlemen assisting in aiding and maintaining respiration by position, artificial respiration, and faradization, could have brought about the final result of resuscitation and easy breathing. The tube (although the larger sized infant tube), was too small for the incision and too short for the depth of the trachea from the surface; it slipped out once, shortly after the operation, but was easily replaced, and by attention to the patient's position, kept in the trachea.

"An hour after the operation the blood had ceased to ooze from the wound, and the breathing was evidently much easier than it had been for two days. It was noticeable that any attempt to close the wound around the flange of the tube, and thus restrict the breathing space to the calibre of the tube, brought on distress, difficult breathing, and breathing through the glottis; while perfect patency of the wound allowed the patient much more ease in respiration—the air passing wholly and freely through the tracheal opening."

The patient passed a quiet and apparently comfortable night, occasionally sleeping quietly and calmly. Several efforts were made to take liquids, but very little if any was swallowed. She retained the sitting posture, with her head slightly inclined forward. In no other position was respiration easy. Nourishment could not be supplied by the mouth. Injections of brandy and beef-tea into the rectum, and hypodermic injection of whiskey were resorted to, but her strength gradually failed, and she died at 6 A. M. on the 12th.

Fig. 1.

Cut from drawing by Dr. McConnel, showing the growth in the larynx. Specimen No. 1221 Army Medical Museum, Med. series.

At the *post-mortem*, made a few hours after death, it was impossible to pass a sound (or even a No. 9 catheter) into the œsophagus, even after separating the trachea from the œsophagus; not that the calibre of the

canal was too contracted, but an intervening septum shut off communication with the pharynx. The larynx being laid open was found to be occupied for nearly two-thirds of its cavity by a tumour, lobular and granulated in appearance, slightly excoriated at one or two points, and springing from the right vocal cord. In extent, it reached from the aryteno-epiglottidean fold to the lower limit of the sacculus, pushing forwards beneath and by the side of the epiglottis towards the hyoid bone. The part of the tumour which had been most plainly visible during the laryngoscopic examination sprang as a semi-detached lobule from the main body of the tumour, at the level of the superior vocal cord, extending upwards towards the root of the epiglottis in the median line, and sending a prolongation below into the ventricle of the left side, so that the glottis was almost obliterated except at its posterior third, leaving a passage sufficient to admit a crow quill on approximation of the arytenoid cartilage. The lower part of the tumour filled up and dilated the ventricle and sacculus on the right side.

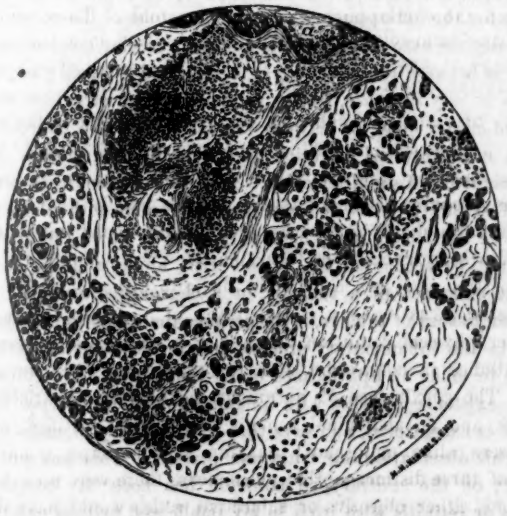
The length of the incision was one inch and one-sixteenth, seven-sixteenths of an inch, by accurate measurement, more than sufficient for the calibre of the trachea-tube inserted, and three-eighths of an inch more than would have been sufficient for its easy introduction. The five upper rings of the trachea were included in the incision.

The occlusion of the passage between the pharynx and œsophagus was found to be due not only to a contraction of this latter tube, but also to thin valve-like folds of mucous membrane, stretched across the lower part of the pharynx—delicate frœna, or duplicatures, such as are seen in symblepharon, for example—these not only tending to diminish the posterior laryngeal space, but really almost forming a cul-de-sac. The catheter already used in this exploration was found to quite fill up the only space left between the overlapping edges of these folds. Thus, while a very little liquid or semi-solid food could insinuate itself into the œsophagus, each attempt at swallowing was followed by partial regurgitation and passage into the larynx of some of the returning material.

Was any operation justifiable in this case? Now that the extent and nature of the obstructing growth in the larynx are definitely known, and the further fact that the dysphagia was due to organic stricture of the œsophagus, probably also malignant, it is quite manifest that the operation could fulfil but a single, and, perhaps, not well-founded indication, substituting a death by exhaustion from inanition for a death by asphyxia. But the question must be considered in the light of the clinical observations, and the issue turns upon a consideration of the advanced age of the patient, her physical condition and probable malignant character of the growth, studied in connection with the dysphagia and the abdominal tumour. The coexistence of a tumour in the larynx, stricture of the œsophagus, and an abdominal tumour, might have justified the opinion that all were alike malignant; but for this, perhaps, remarkable coincidence of three distinct morbid phenomena, there were no other clinical observations, either objective or subjective, which would have determined the fact, and even conceding the malignancy of the laryngeal growth, operative procedure with the view to its removal would not necessarily

have been contraindicated. The expediency should have been determined by the other concomitant circumstances, for epitheliomata have been successfully removed from the larynx; and I believe as a rule, preliminary to any operative procedure to remove the laryngeal growth, tracheotomy or laryngotomy has been performed. In this case the organic stricture of the œsophagus, which was not positively recognized during the life of the patient, presented the chief obstacle to success. No attempt was made previous to the operation to eliminate this doubt, because of the danger of interfering with the embarrassed respiration by the introduction of a bougie into the œsophagus, and surely this danger was not exaggerated, for the morbid specimen very conclusively demonstrates the fact that but very little pressure upon the larynx would have been sufficient to close the very small aperture through which the patient respired. Admitting, for the sake of the argument, that the organic nature of the œsophageal stricture was a logical deduction, and a fair clinical inference from a comprehensive appreciation and analysis of all the phenomena, would not tracheotomy have been justified with the object of removing the threatening complication, so that the impending danger could have been deferred, and sufficient time secured to make a satisfactory exploration? It is quite satisfactory to those present to feel assured that the patient's life was prolonged, though but for one day, by the operation.

Fig. 2.



The only remaining contraindication relates to the advanced age of the patient, and is valid only so far as the presence of calcareous degene-

ration would have enhanced the difficulty and danger of the incision through the cartilages. Happily there is no evidence of any such change, and the case becomes peculiarly instructive, inasmuch as it furnishes an exception to the accepted rule that ossification of the cartilages of the larynx necessarily pertains to advanced age, and is a further confirmation of the view maintained by Dr. Hunt in his paper on "Fractures of the Larynx and Rupture of the Trachea."[1]

Gilewski[2] insists, that, besides the technical objections to operations upon the larynx of old persons, there is "fear of the ready occurrence of perichondritis and even suppuration," but I apprehend this danger is too remote to be valued as a contraindication, when suffocation is impending.

Fig. 2 represents a microscopic section of the laryngeal growth. (From a drawing by Dr. McM.)

ART. XI.—*Observations on some Syphilitic Lesions of the Eye, with Cases.* By CHARLES S. BULL, A. M., M. D., Ophthalmic Surgeon to Charity Hospital, Assistant Surgeon to the N. Y. Eye Infirmary, Microscopist to the Manhattan Eye and Ear Hospital.

WHEN one of the tissues or coats of the eye becomes inflamed, it is not uncommon for the inflammation to extend to some of the other coats, and this is usually the case when there is a direct vascular connection between the parts, as between the optic nerve, retina, and choroid; or, where the connection is very intimate, owing to similarity of structure, as between the iris and ciliary body, or between the latter and the choroid. In the case of a constitutional affection like syphilis, the poison sometimes attacks several parts simultaneously. For this reason it is always well, in cases of syphilitic iritis, to examine the fundus with the ophthalmoscope, for we not uncommonly meet with cases in which the diminution of vision cannot be accounted for by the iritis alone, and an examination reveals the existence of a retinitis, or a choroiditis, or both. In some cases all the tissues of the eye, with perhaps the exception of the lens, are involved in the inflammatory process, and in these instances it is often impossible to make an ophthalmoscopic examination. Hutchinson thinks that the coexistence of iritis with inflammation of the deeper textures of the eyeball is exceptional, and says that in a majority of cases of choroiditis under his observation, no iritis was present. This has not been my experience; on the contrary, so common has been the complication of choroiditis or retinitis with iritis in my public and private practice, that I

[1] Amer. Journ. Med. Sci., April, 1866, page 378. [2] Ibid., vol. li. p. 543.

invariably make an ophthalmoscopic examination. The coexistence of some cutaneous lesion with inflammation of the iris or choroid is an interesting feature, to be duly examined and taken into account in discussing the subject. Of course, as inflammation of the iris is usually an early manifestation of constitutional syphilis, occurring, as it generally does, within the first three months after the initial lesion, the lesion of the skin is almost always of the superficial type, generally a roseola. But we do meet with cases in which the cutaneous affection assumes a much severer form, even at this early date, and commits great ravages; and this is seen oftener in the negro than among the whites, as might be expected from the severity of syphilitic lesions of the eye in the coloured race. That form of cutaneous lesion which occurs at the same time with syphilitic choroiditis, is usually of the papular variety, though I have occasionally seen a pustular affection of the skin in those rather rare cases of suppurative choroiditis. In these cases the iris has always been the seat of gummata, which have generally become disorganized, and turned into real abscesses, and the choroidal inflammation has gone on to destruction of the globe. Among the twenty-seven cases of which I have given a short account in this paper, there were nineteen males and eight females, or more than twice as many men as women.

CASE I. *Iritis.*—John M., æt. 30, single, clerk, applied to me in February, 1871, with an inflammation of the right eye. He had contracted the primary lesion six years before, and about two months later an eruption appeared upon his face, breast, arms, and legs, which lasted some four months. This was followed by sore-throat, enlarged cervical and post-auricular glands, and alopecia. He recovered from these symptoms, and for nearly three years had been perfectly healthy. About eighteen months ago, or nearly four years and a half after the primary lesion, he was attacked by an inflammation of the right eye, which was probably an iritis. This was the first time his eyes had ever been affected. He recovered from this attack completely, and said that his vision was as acute as ever. Two months previous to my seeing him, or sixteen months subsequent to the first attack of iritis, the same eye became again inflamed, but this attack was much more serious, and has lasted up to date. Intense pain, sometimes in the eye and orbit, sometimes following the course of the supra-orbital nerve, and extending as far back as the occiput. The eye presented the usual appearances of a bad attack of iritis, and the pupil was irregularly dilated upward and immovable. The anterior chamber was, however, transparent, and, with the ophthalmoscope, the vitreous humour was found to be slightly hazy, and a number of yellowish-white dots of exudation, of irregular shape and varying in size, were seen in the choroid. The retina did not seem to be much involved, though the veins were very much engorged and tortuous. Vision in this eye was reduced to counting fingers at four feet, but was normal in the other eye. In this case, the *first* attack of *iritis* came on 4½ years after the occurrence of the primary lesion, which is the first point of interest in the case. Another point is the fact that he recovered from this, and sixteen months later had a recurrence of the inflammation, which went on to involve the choroid and vitreous humour. These relapses are very common, and diffi-

cult to manage. The patient was treated by mercurial inunction, followed by iodide of potassium pushed to toleration. The latter drug had to be discontinued from time to time, and, in the intervals, iron and quinia were administered. The patient was under treatment about four months, and, when discharged, all signs of inflammation had subsided, but the pupil remained immovable, and the exudations were about the same size. Vision had risen to $\frac{8}{cc}$.

CASE II. *Cyclitis.*—Lucy M., æt. 30, married; contracted syphilis from her husband about two years before I saw her in April, 1871. She had had an eruption upon her face, chest, and abdomen, and some sore-throat, and vague osteoscopic pains. In May, 1870, or eleven months after the primary lesion, she was attacked by an inflammation of the right eye, which was attended by a good deal of pain, redness, and photophobia. Vision diminished very rapidly at first, but has remained about the same for some months past. The ciliary injection is marked, but seems to be most intense between the insertions of the tendons of the superior and external recti muscles, though there is no external swelling. Cyclitis was diagnosticated more from the localized injection than from anything else, the pain having ceased for the last six weeks. Intraocular tension slightly increased; pupil moderately dilated, and insensible to light, but atropia dilated it well, showing that no posterior synechiæ were present. Vitreous humour so cloudy that no satisfactory view could be gained of the fundus. Vision reduced to counting fingers at eight feet—that of the fellow eye being normal. The interesting point in this case was the occurrence of a cyclitis without any plastic iritis. The choroid was probably involved, as the vitreous was so cloudy. This case also shows how severe an inflammation an eye may be exposed to for so long a period as eleven months, and yet retain a certain amount of vision. An iridectomy was done upwards, and atropia instilled every four hours, and at the end of six weeks all signs of inflammation had subsided, though the vitreous remained somewhat cloudy. Vision improved to $\frac{20}{cc}$.

CASE III. *Choroiditis Exudativa.*—Mrs. S., æt. 33, was seen for the first time in February, 1871. She contracted syphilis in July of the previous year, and has since had an extensive eruption and sore-throat. About two weeks ago she noticed that the vision of the left eye began to be very dim, and rapidly grew worse. There has been no pain and redness at any time, and there is nothing abnormal to be seen about the eye, except that the pupil is dilated. Vision reduced to $\frac{5}{cc}$. Vitreous slightly hazy, and extensive exudation in choroid, evidently of some standing, had involved the optic nerve. The latter was swollen and reddened; arteries very small; veins very much enlarged. The papilla so œdematous as to render its outline indistinguishable. Exudation in the choroid of a dirty yellow colour, and scattered in numerous patches, most of them being near the posterior pole of the eyeball. Retina near the optic nerve-entrance also œdematous, but further out towards the equator it did not seem to be much involved. Patient states decidedly that she had had no trouble of any kind in her eye previous to this attack, so that this seems to be a case where the choroidal inflammation came on rather early, within eight months of the primary lesion. This patient recovered somewhat under the

mercurial treatment, so that the vision rose to $\frac{10}{CC}$, but the nerve showed signs at the last of atrophic degeneration.

CASE IV. *Irido-cyclitis.*—Thomas S., æt. 41, married; contracted a chancre about 2½ years before I saw him, in April, 1872. This was followed by most of the secondary symptoms, among them an iritis, which occurred four months after the primary lesion. This he recovered from, and the eye remained sound and vision good till seven weeks ago, or about two years and four months after the primary lesion. The eye again became red and painful, pain being most severe. At the date of examination ciliary congestion is most marked, and there is prominence over the region of the ciliary body above and to the outside of the cornea. Aqueous humour so hazy that no view of the fundus can be obtained, but the iris is bulged forward at the periphery, and the pupil contracted and immovable even to atropia. This is another case of relapsing iritis, the relapse being much more serious than the first inflammation. The mercurial treatment was commenced immediately, followed by iodide of potassium, and the inflammatory process subsided slowly, so that in about three weeks, an iridectomy upwards and inwards gave good results. $V=\frac{20}{70}$.

CASE V. *Neuro-retinitis in both Eyes.*—W. C., æt. 34, married, salesman; contracted the primary lesion more than *seven* years ago, and has suffered severely from the constitutional symptoms of syphilis. Had an attack of iritis in the right eye about three months after the appearance of the initial lesion, from which he recovered entirely, so that his vision was perfectly restored and the pupil freely movable; but he had a recurrence of the inflammation in this eye two months later, which was of a more plastic nature than the first attack, for it left behind one or two posterior synechiæ, which were only partially broken up by atropia, the pupil being bound down to the capsule of the lens below. More than two years after the appearance of the chancre, the left eye became inflamed in the same manner as the right eye, but the disease ran a much slower course, so that about five months elapsed before all signs of inflammation had subsided. At the present date the pupil of this eye is freely movable to light, but there are several spots of pigment upon the anterior capsule. Since the last attack, now nearly four years, the eyes have been perfectly sound and he has used them constantly for reading, until about four weeks ago. He noticed one evening while reading that his sight was somewhat dim, and that the letters were blurred and ran together. Vision rapidly grew worse, but was unaccompanied by any pain. When I first saw him in October, 1871, the pupils were then moderately dilated and very sluggish, but he did not complain of any photophobia or photopsia. Right eye $V=\frac{20}{70}$, left eye $V=\frac{20}{50}$, no improvement by any glasses. With the ophthalmoscope, there was found myopia $\frac{1}{48}$; the cornea, aqueous and vitreous humour were transparent, but there were some small spots of pigment on the capsule. Both eyes presented well-marked examples of choked disk, "stauungspapille" of Von Graefe. The optic disks and retinæ were very œdematous and swollen, their outlines invisible, the retinal veins very engorged and tortuous, and the arteries about normal in size, and in places concealed by the exudation. There were one or two small hemorrhages on the disk in the right eye, but none in the left. Field

of vision limited to the periphery in both eyes, markedly so in the right. The patient has used tobacco to excess for many years, but has not been addicted to intemperance. For more than a year back has been troubled with severe occipital headache, which for weeks was constant, but lately the pain has been much less severe. This is probably of intra-cranial origin, either from pressure by a tumour in the course or near the origin of both optic nerves, occurring *seven* years after the initial lesion, a late manifestation, or from basilar meningitis. Vision grew steadily worse in spite of mercurials and the iodide of potassium, and the patient disappeared after about two months' treatment. Of course the result was probably complete amaurosis from atrophy of the optic nerves, provided the cerebral lesion did not first end fatally.

CASE VI. *Kerato-irido-choroiditis of Right Eye.*—M. S., æt. 33, married, agent; was seen by me in August, 1871, when he had a severe form of kerato-iritis, with intense ciliary congestion, great pain, photophobia, and lachrymation. The tension of the eyeball was somewhat increased, and the pupil narrowed by posterior synechiæ. Four years ago while in Florida, he had an attack of inflammation in both eyes, which from his description must have been a blenorrhœa. He recovered from this, but both corneæ remained somewhat cloudy from old ulceration. Two years ago he contracted a chancre, which was followed by secondary symptoms, but the eyes had remained well until about ten days before I saw him. Whether the previous inflammation in the eyes had rendered them more than usually susceptible to the syphilitic poison, can of course only be conjectured; but I am inclined to think it was so, for the inflammation ran a very rapid course to an unfavourable issue, and yet the man was in very robust health, and did not drink at all. Atropia was instilled every hour, mercurial inunction persevered in till symptoms of ptyalism showed themselves, and then the iodide of potassium was administered in large doses; but in spite of all treatment, the vitreous became opaque so that no view of the fundus could be obtained. In hopes of staying the process, an iridectomy was done upwards, but the artificial pupil was soon closed by a membranous exudation, the tension rapidly diminished, and phthisis bulbi was the final result. It is not often, fortunately, that we see such a rapidly fatal result from a syphilitic lesion in these days, when the symptoms appear to be losing in intensity from year to year, and it seems worthy of more than a passing notice in this case, where none of the previous constitutional symptoms had been of any severity, and the patient was of fine physique and robust health. I cannot but think that the suppurative inflammation of the conjunctiva, which had involved the cornea, had left it in a condition but little fit to resist the attacks of any constitutional taint like syphilis.

CASE VII. *Retinitis Pigmentosa of both Eyes.*—Mary S., æt. 27, married, was first seen in February, 1872. She had always been short-sighted, but could read and sew perfectly well, and with glasses could see well at a distance; but within the past three months her vision had commenced to fail, and was much better when the sun shone brightly. On examination in the *right* eye, V was $\frac{5}{cc}$, but with concave 6 spherical $V=\frac{20}{xl.}$ In the *left* eye $V=\frac{20}{c}$, and with concave 16 $V=\frac{20}{xl.}$ After atropia, I found in the *right* eye a myopia of $\frac{1}{4}$, and in the *left* eye a myopia of $\frac{1}{10}$, the media perfectly clear in both eyes, but the optic papillæ

decidedly paler than normal, and the arteries somewhat diminished in calibre. In the region of the equator there were scattered the peculiar irregularly stellate pigment masses which we see in retinitis pigmentosa, and some few in the retina nearer the optic nerves. The field of vision was limited concentrically about equally in the two eyes. The patient had miscarried twice, the last time about a year ago. She had one child about five years old, which was sickly but had no decided marks of constitutional syphilis. The patient herself had never been well, and when a child she had suffered from enlarged glands and a sore mouth. Of course it is well known that retinitis pigmentosa is frequently met with in congenital syphilis, and there is no doubt that the patient inherited syphilis. But this form of retinitis almost always comes on in childhood, and very often is itself congenital, and it is exceedingly rare for the retinal disease to be postponed so long as 26 years. It is of course possible that even in this case the process had commenced years before, but it is not probable, for, although its progress is slow, yet it soon affects the vision, and involves the optic nerve. In fact the process ends in atrophy of the optic nerve and whole retina. This patient had some well marked symptoms of congenital syphilis; the teeth being very irregular, and the notches in the incisors such as we meet with in Hutchinson's teeth. I could not elicit any information in regard to the other members of her family, except that two of her sisters had died when children from some wasting disease.

CASE VIII. *Neuro-retinitis.*—J. L., æt. 43, married, labourer, was first seen in June, 1872. In January of the preceding year he contracted the initial lesion of syphilis, which was followed by an eruption upon the face and chest, and ulceration of the fauces, the scars of which are still visible. But there has been no affection of the eye of any kind till the present trouble, which commenced one week before I saw him. Here the disease affects both eyes, and to about the same extent. In the *right* eye $V=\frac{20}{c}$, in the *left* eye $V=\frac{15}{c}$, with large central scotomata, colour-blindness for all except blue, and eccentric vision in both eyes. The ophthalmoscope showed a typical picture of choked disk in both eyes, the papillæ enormously swollen and projecting into the vitreous, engorged and tortuous veins, and œdema of the whole retina, but no hemorrhages. Here was a rather unusual case; an inflammation of the nervous tunic of the eye, depending no doubt upon syphilitic taint, without any preceding trouble in the eye, not even an iritis. There were no head symptoms which might lead to a suspicion of cerebral lesion, and yet I could not satisfactorily explain the appearances in any other way than as caused by pressure. The case only remained under observation for about a week, and then disappeared, but it probably ended in optic nerve atrophy.

CASE IX. *Neuro-choroiditis.*—Mary M., æt. 45, married, mother of eight children, was first seen in September, 1872. Vision commenced to fail about three years ago, but the progress of the disease had been slow. It commenced in the *left* eye, and it is only within the last few months that vision in the *right* has also commenced to fail. She volunteered the statement that her husband had given her syphilis, and that she had suffered from alopecia, sore-throat, and osteoscopic pains, and she has at present a series of nodes along the spines of the tibiæ, some of them of considerable size. The *left* eye shows signs of an old iritis, with spots of pigment on the capsule, and vision was $\frac{20}{c}$, with the right eye $\frac{20}{xl}$. An oph-

thalmoscopic examination showed in the *left* eye quite extensive spots of exudation into the choroid over the whole fundus, some being of old date and surrounded by pigment, while others were quite recent. The nerve was white; the branches of the central retinal artery considerably reduced in calibre; retina somewhat hazy immediately round the papilla, but not much altered elsewhere. In the *right* eye there was no exudation into the choroid, but the whole fundus was intensely congested and had a sodden, œdematous appearance, as if soaked in water. The process was stopped in the right eye by prompt mercurial treatment, but the vision was not improved in either eye, and in fact gradually sunk in the left eye to $\frac{10}{cc}$, where it seemed to remain for some months. How long a time elapsed between the occurrence of the chancre and the appearance of the iritis, we do not know, but the woman thought it was about fourteen months. We also do not know how long a time the iritis antedated the choroidal disease, or whether they both occurred simultaneously, but I am inclined to favour the latter view, as the vision steadily grew worse from the commencement of the trouble.

CASE X. *Choroiditis.*—J. T., æt. 29, single, book-folder, was first seen in June, 1872. She has been suffering from the constitutional symptoms of syphilis for seven years, but does not know when she contracted the primary lesion. The fauces and posterior wall of the pharynx show very large cicatrices, so that the ulceration must have been very extensive. The most obstinate symptom has been a cutaneous eruption, which came on nearly seven years ago, and lasted about four years. About five years ago her eyes began to trouble her, the disease causing some pain and photophobia, and vision began to fail, but grew slowly worse. There has never at any time been any sign of a violent inflammation. At the date of admission both eyes were normal in appearance, the irides of natural colour, and the pupils regular and reacting under the stimulus of light. On examination $V = \frac{20}{cc}$, but with concave 36 spherical she read $\frac{20}{L}$ with either eye. There was an insufficiency of the internal recti of 1° at 18 feet, and of 3° for a distance of 18 inches. No limitation of the field of vision in either eye, and no colour scotoma. The ophthalmoscope showed a myopia of $\frac{1}{36}$; the media perfectly clear; the optic nerves very much reddened; the temporal edge swollen out like a wall; veins engorged, tortuous, and very dark; arteries very much reduced in calibre. Scattered all over the choroid, but more generally in the equatorial region, were masses of yellowish-white exudation, of very irregular shape and size, some of which appeared to push the retina before them. Most of these were surrounded by lines of pigment, showing the process to be of long standing, but in the region of the macula lutea were some bright, glistening spots resembling the changes in the retina in albuminuric retinitis, but lying deeper. There was no agglomeration of these masses of exudation near the posterior pole of the eye, which Graefe thought to be characteristic of syphilitic choroiditis, but the case was a type of choroiditis disseminata. Under mercurial treatment, followed by iodide of potassium and long continued administration of tonics, this patient grew somewhat better and vision increased to $\frac{20}{XL}$, congestion of the optic papillæ subsided, and they assumed a healthy appearance, except that the arteries still remained narrowed. The choroidal

process was a very slow one, and was the first manifestation of any specific trouble in the eye. There were no signs of any previous iritis or hyalitis, and the choroiditis must here be regarded as one of the late symptoms of the syphilitic taint.

CASE XI. *Choroiditis.*—J. H., æt. 27, single, night watchman, applied for treatment in June 1872. For the past two months there has been a gradually increasing dimness of vision of the *right* eye, with some pain and photophobia; has never had any affection of the eye before, and only complains of the right eye. He contracted syphilis three years ago, which was accompanied by enlargement of the inguinal glands on both sides, and the ulcer, which was on the prepuce, remained open for nearly three months. Before the chancre healed, an eruption appeared upon his face, chest, and arms, which seem to have been of a scaly nature. He recovered from this entirely, so that there was no trace left upon the skin, and remained well until about a year later, when another eruption appeared on his arms and legs, which was much more serious, as it resisted treatment for a long time, recurred again and again, and has only lately subsided, leaving behind it a permanent discoloration of the skin. About the same time he suffered from alopecia, and a peculiar huskiness of the voice. There was nothing abnormal noticeable in the eyes, except an extreme myosis, and great sluggishness of the pupils.

Right eye $V=\frac{20}{0}$, left eye $V=\frac{20}{XXX}$; no limitation of the field of vision. The ophthalmoscope revealed in the right eye a recent exudative choroiditis, the spots being small in size and few in number, and massed in the region of the macula, and optic disk. The choroidal stroma was plainly visible, owing to the small amount of pigment in its meshes, and its vessels were enlarged and tortuous. The nerve did not seem to be much affected; retina tolerably transparent, and vitreous perfectly so. Refraction slightly hypermetropic. Pupil dilated fully though slowly by atropia, and there were no signs of any preceding iritis. The *left* eye showed nothing abnormal beyond a slight congestion of the optic papilla. Under mercurial treatment the patient grew rapidly much better, so that vision went up to $\frac{20}{L}$ in the *right* eye, remaining as it was in the *left* eye. There seems no doubt that this was a case of incipient choroiditis, before the functions of the choroid had been seriously impaired, and while the disease had as yet apparently only involved one eye, and hence the good results of treatment. Here again must the choroiditis be regarded as a late symptom of syphilis, three years having elapsed between the occurrence of the initial lesion and the commencement of the trouble in the eye.

CASE XII. *Choroiditis.*—T. O., æt. 62, married, carpenter, was first seen by me in November 1872. He complained of a dull, heavy feeling in the head, accompanied by dizziness, and of a dimness of vision, which dated back two months, and which has steadily grown worse. He contracted a chancre *eight* years ago, and two months later an eruption appeared, which lasted several months. Since then he has suffered from most of the symptoms of general syphilis, and at present complains of intense pain in the bones of the head, anus, and legs. An examination showed nodes along the tibiæ over the crest of the ilium, and along the posterior aspect of the ulna, and the frontal bone was very tender to the touch, as if the seat of periostitis. Three years ago he had an attack of iritis in right eye, and afterwards in the left, for which he had no treat-

ment, and which left their traces, both pupils being nearly immovable from posterior synechiæ. He has had several recurrences of inflammation in both eyes, but insists that his sight was good enough to enable him to work at his trade until two months ago. In the *right* eye $V=\frac{8}{cc}$, in the *left* eye $V=\frac{20}{cc}$, with no improvement by any glass. After atropia had been instilled a number of times, the pupils dilated somewhat though irregularly. An ophthalmoscopic examination showed extensive exudative choroiditis with progressive atrophy of choroid and optic nerves, which had evidently been going on for some months, and perhaps a year. Of course much improvement by treatment could not be expected, and in fact after a two months' course of mercury and iodide of potassium, vision was still the same as at first, though the patient's health was somewhat better. In this case, the deep trouble of the eye, though preceded by several attacks of iritis and perhaps of cyclitis, yet was postponed for a very long time after the occurrence of the primary lesion, and the interval was the longest but one that I have met with.

CASE XIII. *Congenital Syphilis with Choroiditis Disseminata.*—Ida E., æt. 9, was brought to me last October by the mother, with the story that on the previous day she had noticed that the child was completely blind in the right eye; and that she had never previously noticed anything the matter with her eyes. The bridge of the child's nose had fallen in from caries of the bones, with chronic ozæna, and a very profuse and offensive discharge, which first appeared when she was six weeks old, and she has been subject to frequent attacks of keratitis. She has at present a slight degree of interstitial keratitis. The teeth are slightly notched though not markedly so, and the hard palate and fauces are the seat of extensive ulceration. In the *right* eye there is merely perception of light, and the *left* eye has $V=\frac{20}{c}$. The ophthalmoscope showed a typical example of choroiditis disseminata, with dense white atrophic appearance of the *right* optic nerve, and a less degree of atrophy of the left optic nerve. The fundus of each eye is covered with immense masses of pigment, reaching from the optic papilla to the ora serrata. The irides were discoloured, but the lens clear in both eyes. The father of the child is now suffering from tertiary symptoms, and the mother has once aborted. A sister of the child died of phthisis pulmonalis, and there are signs of syphilis in another child of the same family. Thus we certainly have a well-marked case of hereditary transmission, and the eyes of the patient are almost a pathological museum themselves. Treatment did this child very little good, except in improving her general health. The *right* eye remained amaurotic, and there was scarcely any improvement in the *left*, though the corneæ both cleared up remarkably.

CASE XIV. *Irido-Choroiditis.*—C. J. C., æt. 30, married, clerk, was sent to me by the kindness of Dr. Eno. The patient contracted the primary lesion in September, 1873, which was followed by enlargement of the inguinal glands. Six weeks later an eruption appeared on the face, and he suffered from superficial osteoscopic pains, alopecia, and aphonia. In March, 1874, six months subsequent to the initial lesion, he was attacked by a plastic iritis in the right eye, with posterior synechiæ, numerous condylomata, and turbidity of the *vitreous* humour. Two weeks

later the left eye became affected in the same way, with condylomata and a punctate exudation upon or in the membrane of Descemet. In this case the condylomata sprang from the pupillary margin of the iris, and a trifle posteriorly, as is usual. The exudation upon the posterior surface of the cornea increased, and looked like an interstitial keratitis. An ophthalmoscopic examination showed a slightly turbid vitreous and a marked congested appearance of the nerve and choroid, but as yet no exudation. This case steadily improved under treatment, and the deeper tissues of the eye have apparently escaped as yet.

CASE XV. *Irido-Cyclitis.*—M. H., æt. 46, single, baker, also kindly sent me by Dr. Eno in April, 1874, contracted the primary lesion four months before, and had an eruption on the back, arms, and neck, some traces of which remain at date. One month ago he was attacked by pain, redness, and dimness of vision in the left eye, and ten days ago with the same in the right eye. At present the iritis is very marked in both eyes. The irides are discoloured, the pupils very slightly and irregularly dilated, though atropia has been used for several days; the posterior synechiæ are very extensive, and the ciliary injection is so marked and localized over the insertion of the superior rectus muscles and outwards from this, as to lead to a suspicion of cyclitis. The pain is very severe, the irides drawn backward, the anterior chamber very deep, and the aqueous humour turbid; there are no condylomata. This patient also improves under treatment, and at no time has there been any inflammation of the retina or choroid, thus agreeing with most of Hutchinson's reported cases.

CASE XVI. *Double Iritis.*—H. D., æt. 21, single, cartman, first seen early in April, 1874; had contracted a chancre six months before, which was followed by enlarged inguinal glands on both sides, superficial and transient osteoscopic pains, and four months later ulceration of the fauces and posterior wall of the pharynx. To this succeeded a somewhat profuse discharge from the nostrils, and alopecia. One month later, or five months subsequent to the primary lesion, there appeared a papular eruption on the face, neck, and arms, and enlarged cervical and post-auricular glands. The eruption soon took on a pustular character, and six months after the initial lesion both eyes were attacked simultaneously by iritis. When I saw him, on the sixth day of the attack, both irides were discoloured, the ciliary injection was very marked, and the pupils were bound down by posterior synechiæ. There were no condylomata, and the patient had experienced scarcely any pain. Atropia was instilled every two hours, and a drachm of mercurial ointment rubbed in the shoulders and groins alternately, night and morning; but it was not until the third day that the pupils showed any sign of dilating, and then very irregularly. The irides were bulged out at the periphery or "bombé." On the seventh day the pupil of the left eye was widely and regularly dilated, and the right pupil nearly as widely, and the eruption was rapidly subsiding. As the patient showed signs of ptyalism, the mercury was discontinued, and iodide of potassium given in large doses. The patient made a good and rapid recovery, though with spots of pigment remaining on the capsule.

CASE XVII. *Scleritis of Left Eye.*—C. D., æt. 36, married, seamstress, applied for aid in April of the present year, having contracted syphilis from her husband more than ten years ago; has suffered severely with sore throat and nodes on her arms and legs, but her eyes had never been affected until about seven years ago. At that time she was treated for an inflammation of the left eye at the N. Y. Eye Infirmary, attended

with great pain, with an almost entire loss of vision, which has never been recovered. About six weeks before I saw her, the *left* eye again became inflamed and very painful, but the *right* remains as sound as ever. There was a localized redness and slight swelling in the ciliary region between the superior and external rectus muscles, which extended back about four lines from the line of insertion, and was painful on pressure. On examining with the ophthalmoscope, the vitreous was seen to be occupied by an organized membrane, partly floating free, but attached broadly to the fundus in the upper and inner quadrants. In the external quadrant there was seen a dark-brown mass, which was stationary, and which was possibly connected with the external swelling. The nerve entrance could be seen in part, though not very distinctly. Pupil dilatable; cornea and lens clear. Fundus of other eye normal, and showed a hypermetropia of $\frac{1}{3}\frac{1}{0}$. No improvement by treatment.

CASE XVIII. *Iritis and Retinitis.*—Samuel V., æt. 31, married, contracted the primary lesion five months before I saw him in April, 1874. This was followed by swelling of the inguinal glands, and two weeks later an eruption appeared upon the abdomen, legs, back, face, and hands, which was probably a roseola. About two months later he began to suffer from periosteal pains, and on the first of April an iritis commenced in the right eye, accompanied by severe pain and marked failure of vision. When I saw him there was a well-marked iritis, with great pain and photophobia, and below and on the temporal side a small condyloma. This occupied a very unusual site at the periphery of the iris, and inclined forward against the cornea. There was a general retinitis, the whole retina being œdematous, with engorgement of the vessels and an exudation upon the papilla. Vision reduced to $\frac{20}{cc}$, but no limitation of the field. Under the usual mercurial treatment the patient made a good recovery, and he was discharged in five weeks with a vision of $\frac{20}{xxx}$.

CASE XIX. *Iritis.*—Patrick M., æt. 23, single, labourer, had primary lesion in January, 1873, followed by enlargement of the inguinal glands, roseola, ulceration of the fauces, and periosteal rheumatism. Seventeen months later the right eye became inflamed, accompanied by pain, photophobia, and some diminution of vision. In a few days the eye grew better, but he suffered a relapse, and presented himself at the infirmary. There were no signs of any posterior synechiæ or deposit on the capsule, and no discoloration of the iris. He had a papular eruption on the arms, chest, and legs. Vision only $\frac{2}{7}\frac{0}{0}$, but there was such extreme photophobia that no view of the fundus was obtained. The left eye, however, was found to be highly myopic, with refraction of $-\frac{1}{6}$, a very large posterior staphyloma and atrophy of the choroidal stroma. The treatment by inunction was commenced, and in about one month all signs of inflammation had subsided. With a concave 6 glass, vision was increased to $\frac{2}{3}\frac{0}{0}$ in both eyes, and the patient was discharged cured.

CASE XX. *Iritis.*—James B., æt. 36, married, contracted the primary lesion in August, 1873, which was followed by the usual train of constitutional symptoms. The right eye was attacked by iritis in October of the same year, two months after the inception of the disease, for which he was treated at the infirmary, and recovered entirely in four weeks. In January, 1874, he had a relapse, which lasted six weeks, and left the vision very dim from deposits on the capsule and posterior synechiæ. In May of the

same year he had a second relapse, which had already lasted a month when I saw him. The left eye has never been affected, and vision remains normal. There have been no condylomata, and the whole process has been of a very sluggish character, so that, although the usual mercurial treatment was resorted to for a number of weeks, the eye remained in about the same state. There was no retinal or choroidal complication, though the media were somewhat cloudy. He was finally discharged after two months' treatment with a vision of $\frac{20}{70}$.

CASE XXI. *Irido-Choroiditis; Neuritis Descendens; Cerebral Tumour; Death.*—William L., æt. 30, married, Scotchman, was an exceedingly interesting case which terminated fatally, and the autopsy confirmed the diagnosis in a remarkable degree. The patient contracted a chancre in April, 1872, which was followed by the usual constitutional symptoms, for which he was treated in Charity Hospital. Six weeks after the occurrence of the initial lesion he was attacked with double iritis, which yielded to mercurial treatment. One year later he had another attack of iritis in both eyes, and an eruption of acne on the face and chest, and mucous patches in the mouth. In October, 1873, he entered the infirmary with a third attack of double iritis, and after six weeks' treatment a double iridectomy was done upwards, which gave an excellent result, vision being $\frac{20}{30}$. He remained in the institution as a nurse, and two months later the vision commenced to fail in both eyes. The ophthalmoscope showed a double choroiditis, with spots of exudation all over the fundus, haziness of the vitreous, and numerous floating bodies, the left eye being much the worse. The usual treatment was resorted to, and the iodide of potassium was given in constantly increasing doses until he took four drachms daily for a number of weeks. He then began to complain of constant headache, the potash was discontinued and mercurial inunction again resorted to, but with no avail, and the headaches grew worse. On June 15th he complained of insomnia, and began to act very strangely, wandering in his mind, talking to himself, and inattentive to his surroundings, though he could be roused. Pulse was about 80 and soft, temperature 98½° to 99°. On the morning of June 17th he was found completely hemiplegic on right side, with facial paralysis of same side, loss of speech, and semi-comatose. Sensation and motion completely lost, pulse 60 and bounding, temperature 98½°. On June 19th sensation began to return in the leg and arm; he was very restless and noisy, though unable to speak. Pulse and temperature varied very little till June 23d, when the pulse went up to 78, and his sphincters became relaxed. Sensation was completely restored, and at times he was entirely conscious. There were some coarse mucous râles over the right lung, and he had a slight cough. This condition remained about the same till July 10th, when a change for the worse showed itself, and his pulse and temperature went up to 100. On July 12th pulse 130, temperature 102⅝°, and he became very somnolent. He died on the morning of July 15th, comatose. *Autopsy* twelve hours after death. Organs of the thorax and abdomen healthy; the membranes of the brain engorged as well as the brain itself. The subarachnoid cavity contained considerable fluid, and the ventricles were distended with serum. There were no signs of any hemorrhage, or of any endo-cranial bony growth, or of any meningitis, but there was a thrombosis of the right middle cerebral artery, and, just in front of the optic thalami, a little to the right of the median line but reaching across this line, was a stellate cicatrix on the basilar surface, the remains in all probability of a syphilitic gumma, which had undergone disintegration and absorption.

CASE XXII. *Choroiditis.*—Julius L., æt. 45, married; contracted primary lesion about thirteen years ago, which was followed by a very obstinate train of constitutional symptoms. One year later the right eye became inflamed and very painful, and the iritis was of such an obstinate nature that six months passed before the inflammation entirely subsided. Has had several relapses in the right eye, and vision has slowly failed. Six months ago the vision of the left eye began to fail, though the eye has never been inflamed. Three years ago he had an attack of apoplexy, and was unconscious for a week, and was paralyzed from the waist downwards, while the arms were not affected. In the right eye $V=\frac{20}{70}$, in the left eye $V=\frac{20}{40}$. Pupils are moderately dilated, but extremely sluggish; media clear, but each eye is the seat of a pronounced choroiditis disseminata, with a most abundant pigmentary deposit, grouped near the optic nerve and macula. The spots of pigment are so nearly of a size, and so regularly arranged, as to resemble the pictures of the layer of hexagonal cells on the posterior surface of the retina. In the retina itself are numerous irregular, stellate, and shapeless masses of pigment, some overlying the vessels. Optic papillæ of a dirty-white colour; arteries much reduced in calibre. The antisyphilitic treatment was persevered in here for nearly two months, but there was no improvement of vision, and the atrophic process in the nerves went on in spite of the administration of strychnia.

CASE XXIII. *Iritis.*—Benjamin E., æt. 23, single, coloured; contracted a chancre in the summer of 1872, which was followed by some constitutional symptoms, none of them very marked until December, 1873, when an eruption appeared on the arms, and spread all over the face and body. There have been no glandular enlargements, but the patient suffers intensely from periosteal rheumatism. In January, 1874, had an attack of iritis in both eyes, of a very virulent type. He was treated for five months, but the left eye was eventually lost, and was enucleated in New Haven. When I saw him, the right eye was very much inflamed, iris discoloured, pupil irregular, and bound down immovably to the capsule of the lens, and pupillary space occupied by a whitish-yellow mass, probably pus. There were several gummata of small size in the lower part of the iris, the anterior chamber was half full of pus, and the pain very great. After a vigorous mercurial course, followed up by potash, iron, and quinia for three weeks, the inflammation subsided, the synechiæ were broken up, and vision of $\frac{20}{40}$ was reached, and the patient discharged on the 20th of July. On the 24th of August he again entered the infirmary with a violent relapse, great pain, a large hypopyum, and the tension very much diminished, and he is still under treatment.

CASE XXIV. *Irido-Choroiditis.*—Norah C., æt. 20, single. Does not know when she contracted syphilis, but two years ago the vision of the right eye began to fail, without any pain or signs of inflammation, and the sight has slowly grown worse. About eight months ago the vision of the left eye began to fail in the same way, and she can now (July 6, 1874) only count fingers at two feet with the left eye, and at six inches with the right eye. Has had ulceration of the pharynx and fauces, a cutaneous eruption which still exists, and alopecia. About six weeks ago she aborted with a female child at the seventh month. There are marks of

old iritis in both eyes, and in the right eye the pupil is immovable, and filled by a membrane. In the left eye the pupil can be dilated, and the ophthalmoscope shows an old choroiditis, with a detachment of the retina on the temporal side, and incipient cataract. The tension of both eyes is somewhat diminished. Treatment here was of no avail, the vision steadily grew worse, and patient was discharged.

CASE XXV. *Iritis.*—Frederick W., æt. 26, single. Contracted initial lesion four months before, which was followed by the usual symptoms, and eight days before I saw him the inflammation commenced in the left eye. There are complete posterior synechiæ, but no condylomata. No retinal or choroidal complication; complete recovery in three weeks.

CASE XXVI. *Irido-Choroiditis.*—Daniel M., æt. 30, single. Initial lesion four years ago, followed by the usual manifestations of constitutional infection. Right eye became affected within two months, and the inflammation ran a rapid and destructive course, attended by excruciating pain. When I saw him there was an old irido-choroiditis, with a luxated cataractous lens, with a ciliary neurosis occurring every few weeks, but no active inflammatory symptoms. The globe was atrophied, the iris fluttering, and sympathetic trouble had already commenced in the fellow eye. The patient refused an enucleation, and was discharged.

CASE XXVII. *Retinitis.*—John D., æt. 29, single. Primary lesion contracted ten years ago, followed by constitutional symptoms. Two years ago the right eye began to trouble him for the first time; without any pain or sign of inflammation, vision suddenly grew dim, and continued so for some weeks, when he recovered his sight. About one month ago, the eye having remained well in the interval, vision again began to fail. The left eye has remained well all the time. *R. E.* $V=\frac{20}{70}$, *L. E.* $V=\frac{20}{20}$, *Hm.* $\frac{1}{4\frac{1}{2}}$. In right eye, retina is œdematous and swollen, veins engorged and tortuous, and vitreous somewhat hazy. No signs of old iritis. The patient was discharged in three weeks. $V=\frac{20}{30}$.

It may be seen from these cases that iritis is not always the first symptom of syphilitic disease of the eye, as in six of them it did not occur at all. We also learn to dread relapses from iritis, as they generally involve the deeper tissues of the eye, and set up a choroiditis, or cyclitis, or both. Though it is rare to see an inflammation of the optic nerve or retina as the first lesion of syphilis in the eye, yet we do meet with such cases. Again, we see that it is not at all uncommon for one eye to remain sound throughout many years, though the more virulently the disease manifests itself in one eye, the greater danger there is to the other eye; and relapses should always excite fear for the unaffected organ. The destructive course run by a syphilitic inflammation of the eye in the coloured race, which I have elsewhere called attention to (*Archives of Scientific and Practical Medicine*, March, 1873), seems to receive confirmation in Case XXIII In many of the cases the first manifestation of any trouble in the eye was postponed for years after the occurrence of the chancre, but yet no rule can be stated to help us in the matter of prognosis. Of course, the earlier

a proper mercurial course of treatment is begun, and the more faithfully it is carried out, the better are the chances that the eyes will escape. And I think we may safely say, that the unfavourable cases of syphilitic lesions of the eye, those which we see for the first time long after the trouble has commenced, have reached this condition from lack of proper treatment, or from worse neglect. Mercury and iodide of potassium, with iron and quinia, and a proper attention to diet and hygiene, will do wonders when the case is understood.

214 West 44th Street, N. Y., Sept. 10, 1874.

Art. XII.—*On "Bloodless Surgery."* By John R. McClurg, M.D., of West Chester, Pennsylvania.

Inasmuch as Professor Esmarch's "Bloodless Method" for surgical cases is now claiming the attention of the world, and as in its connection one of the leading surgeons of Europe recently said that "operative surgery has reached the utmost bounds of perfection," while another declared that "this country—England—and America divide the conspicuous honour inseparable from the discovery of anæsthesia, that Chassaignac's system of drainage, to which justice has scarcely been done, is one of the greatest contributions amongst the many with which Frenchmen have enriched surgical art," and that "now the Professor of Surgery at Keil has introduced a method of procedure calculated to influence most beneficially, in the conjoined interest of science and humanity, a large domain of surgical practice," a few remarks upon this "triumph of surgery" may not be superfluous. The great advantage claimed for Esmarch's method is the saving of blood, that operations can be performed and limbs removed with little more than the mere sight of blood, not one drop of arterial blood being lost. It is not, however, so far as I know, claimed that the divided tissues heal more readily, that the shock to the system is in any degree lessened, that subsequent oozing and secondary hemorrhage are less likely to occur, or sloughing, mortification, or pyæmia to follow an amputated limb. But while it is admitted that by the use of the elastic roller and cord *bloodless operating* can be attained in favourable situations, as upon the extremities, yet all do not admit that even here do we have *bloodless operations*, for after the removal of the elastic bandage or cord, a general and "continued oozing of blood from the divided tissues invariably follows, which necessarily prevents primary union of the wound." If the saving of blood to the patient was the only thing necessary, or even one of the principal requisites to insure success in surgical operations, we could not be too careful in taking advan-

tage of every appliance to attain that object, but experience forces me to believe that the loss of blood in ordinary amputations and other surgical operations, has very little to do with the result in a vast majority of them. How often in other cases, as in epistaxis in children, in *post-partum* hemorrhage, and puerperal eclampsia, do we have the loss of vast quantities of blood, yet with the most successful terminations. In puerperal eclampsia the physician will occasionally take from thirty to one hundred ounces of blood, and the patient afterwards speedily recovers her health again. There is no doubt, that, by loss of blood, as after a copious venesection, or where in an accident great vessels have been opened, the quantity of that fluid in the system is diminished, and anæmia may result for a short time, after which, by rapid absorption of fresh matter, the amount of blood speedily becomes in quantity as before. The blood is undoubtedly for a still longer time of a different composition than before the abstraction, containing fewer corpuscles, a deficiency of the salts, and more water and albumen, but this state is more properly one of spanæmia than anæmia. But I do regard it to be advisable in all surgical operations, when at all practicable, to keep the general circulation as normal as possible; therefore, upon primary cases following great loss of blood, every effort should be made to prevent further loss, forcing as much of the blood from the limb into the general circulation as possible before amputation; in which effort we would not induce an abnormal but promote a normal state of the bloodvessels. This procedure is also advisable in many other operations, as in the removal of tumours and other morbid growths, in operations upon the extremities, and particularly in resections when the tissues are not infiltrated with pus or unhealthy sanies, and in which there is no curtailing of the body, as we have in amputations.

But even in primary cases resulting from severe injury or otherwise, unattended by loss of blood, I doubt the propriety, in amputations, say of the thigh at the upper third, of attempting to force all the blood contained in the limb into the general circulation of the remaining portion of the body. The effort if accomplished would surely produce an abnormal and hyperæmic condition, in which a preternatural accumulation of blood in the capillary vessels of the brain, or some other organ, may follow, until these vessels, increased to double or even triple the ordinary size, then not unfrequently become ruptured. I have amputated the thigh quite a number of times in private and in military practice, more than a dozen times at the upper third, three-fourths of which recovered, and I have been well satisfied always to leave the blood in the limb, together with the pus, sanies, and septic maters with which the tissues may have been saturated, stopping the flow of blood the moment before using the knife by compression at the inguinal region with Petit's tourniquet with a strap long enough to pass around under the perineum, up behind

the pelvis, and then forwards over the crest of the ileum and buckled in front. I would, however, advise in many instances the use of Esmarch's *elastic cord* instead of Petit's tourniquet to arrest completely the flow of blood from the system, dispensing with the *elastic roller* to the limb in all cases like the following, which I give in this connection as fair samples of those usually requiring amputation, except upon the battle field, or after great accidents.

Case I.—Isaac B. Jefferis, 46 years of age, a farmer, six feet in height, healthy and of active business habits, was injured by a horse on the 26th of June, 1874, receiving a complicated fracture of the left leg, in which both bones were comminuted at the ankle, the soft parts injured and torn open some three inches on its external aspect. I made every possible effort to save the limb, but on the 29th, the foot was cold and the ankle was covered with the bullæ of traumatic gangrene, while the patient had nausea and vomiting, very restless and anxious, high fever, quick pulse, and no disposition to take the least nourishment. On the 30th he was more comfortable, less fever, pulse 120, the limb much swollen, the foot and ankle cold and gangrenous. July 1st more comfortable, entirely free from pain, pulse 120, temperature reduced, and the skin moist, the foot and ankle mortified, while the leg was much swollen to the knee, and the cellular tissues infiltrated with unhealthy sanies. Amputated at four o'clock P.M. Anæsthetic, equal parts of chloroform and Squibb's sulph. ether, two and a half ounces used, Petit's tourniquet applied, and the limb amputated at the middle third of the thigh, antero-posterior flap operation. The patient rallied well, the stump healed by first intention with hardly one ounce of discharge from the time of first dressing, and upon the fifth week from the date of injury he was attending to his business.

Case II.—John Scott, 26 years of age, a farmer, was injured some three years since by a horse, and suffered for a long time afterwards with what was supposed to be chronic synovitis of the right knee. During the past eighteen months he became much worse, suffering intensely, and became reduced to the brink of the grave by long-continued and profuse suppuration of the whole limb. On July 24th, 1874, I found him greatly emaciated and so weak and his limb so painful that it was impossible for him even to turn in bed, pulse very feeble, and 140, skin cold and moist, the limb much swollen, very painful, the cartilages of the knee destroyed by ulceration, and the bones necrosed, while a large collection of unhealthy matter burrowed amongst the muscles up to the groin. It was thought to be almost impossible for him to stand the shock of amputation, but this being his only chance for life, I gave him four ounces of good whiskey, and soon afterwards had him under the influence of the anæsthetic—equal parts of chloroform and Squibb's sulph. ether, two ounces being required. Petit's tourniquet was applied, and the limb amputated at the upper third of the thigh, *bilateral flaps*, or half way between the antero-posterior and the lateral methods; loss of blood about four ounces. The patient rallied well, no doubt assisted by the whiskey, for in addition to the quantity given before the operation, four ounces were administered by injection upon the removal of the limb, and soon after two ounces more to drink. He was well nourished with whiskey punch, egg-nog, extract of beef, chicken broth, milk, etc., and recovered strength rapidly, the stump

healing slowly with moderate discharge, and he is to-day, August 17th, sitting up and will surely recover perfectly.

CASE III.—Some time since I amputated the thigh at the upper third in the case of a little son (14 years of age) of Mr. M. Wright, for encephaloid cancer of the knee. The foot and ankle were not much swollen, but the knee was almost as large as the patient's head, the skin unbroken, the bones of the joint entirely destroyed, and their place filled with a great mass of encephaloid substance and putrid fluid. The patient was greatly prostrated, and required only about one and a half ounces of the anæsthetic; the artery was compressed at the pubis by an assistant; antero-posterior flap operation; loss of blood about four ounces. He improved rapidly in strength, while the stump slowly but completely healed. Some months afterwards, I learned from his physician, that he died from an attack of pneumonia.

I could give many other cases, but these are sufficient at this time, and are good samples of those usually requiring amputation, and are certainly not such as should be regarded as favourable for Esmarch's method. In the hands of judicious surgeons the elastic roller and cord will without doubt prove a most valuable acquisition, yet their indiscriminate use should be avoided, for it is infinitely better for the patient to lose a few ounces of blood, even if in a prostrated and anæmic condition, than to force from the limb its poisoned blood, septic matter, or unhealthy sanies, or indeed even healthy pus with which the tissues may be saturated, into the general circulation to poison the whole blood mass, or into the structures forming the stump, thence to be absorbed into the system, or to slowly return and ooze from the cut tissues to poison them and retard union. I do believe it is possible for large collections of unhealthy matters to remain pent up in almost any portion of the body for a long time, and the system not be contaminated thereby, but not so when by violence we rupture these cysts and sinuses, together with the capillary vessels, and indeed even larger blood-vessels, and forcing these matters far beyond their original location into the cellular tissue and general circulation. In such cases pyæmia or septicæmia and death follow.

WEST CHESTER, Pennsylvania, Aug. 17, 1874.

ART. XIII.—*Amputations by Ligature and Elastic Cord.* By N. R. SMITH, M.D., Emeritus Professor of Surgery in the University of Maryland. (With a wood-cut.)

THE use of the ligature in aid of the knife, in amputations, dates with me some twenty years anterior to the present. This means of effecting the removal of parts has been strongly suggested by the remarkable case, familiar to my readers, of the penetration of the scalp and even the bones

of the cranium, by a fine gum-elastic band worn for a long time on the head of a young lady, as an article of dress. It was manifest from that case that an elastic cord, by its steady but gentle pressure, may penetrate the most resistant parts without causing such pain as to demand its removal.

The case which I shall first relate is one in which the silk ligature (inelastic) was employed.

I. *Amputation of the Tongue by Ligature.*—Early in Nov. of 1873, I was consulted in a remarkable case of enlarged tongue in the person of a young lady about thirteen years of age. She was accompanied by her physician Dr. A. S. White, a very intelligent practitioner of Montgomery County, Maryland.

The date of the origin of the disease was not accurately known; but it had been in progress for months. At the time at which it was first submitted to me, the organ was permanently protruded from the mouth, and could not in any degree be retracted. The protruded portion was some two inches in length and an inch and a half in diameter, presenting the appearance here imperfectly represented. The teeth, above and below, had deeply impressed it, so that, when viewed laterally, it had the appearance of a pear of medium size. The teeth were distorted by long-continued pressure, and some of them lost.

There was but little sensibility in the organ, nor did she suffer much but from its dryness and rigidity. The deglutition of fluids was difficult, and the mastication of solids impossible. However, she presented the appearance of being well nourished.

The extirpation of the hypertrophied portion of the tongue was, of course, demanded. Its section by the knife was discussed, but the anticipated hemorrhage, when the stump should be retracted into the fauces, and the difficulty of arresting it, forbid that expedient. I suggested the application of a silk ligature, and with the concurrent opinion of Dr. White in favour, proceeded to apply it. I employed a stout thread of saddler's silk and drew it with as much force as I well could. The thread sunk into the furrow caused by the pressure of the teeth. Much to my surprise it caused very little pain, and, while she was with me, she scarcely complained at all.

It was understood that Dr. White should apply a second ligature, and even a third, if necessary, at intervals of two or three days, and then use the scissors to separate any shreds that might remain. She was then taken to her country home.

Dr. White relates the sequel in a letter to me dated a few days after the first operation.

"I am pleased to inform you that I removed the tumour this morning, it being held by nothing but fascia. I separated it with scissors after the application of a fresh ligature, which I thought best, to guard against

hemorrhage in case there should be any bloodvessels not constricted. I am pleased to say that she has not lost more than an ounce of blood since the operation was commenced. The healing process is going on rapidly and as favourably as we could desire."

In a letter of later date (Nov. 17, 1874), Dr. W. informs me that "the health of our former patient has been uniformly good since the operation. She has a perfectly healthy stump, and articulates well, notwithstanding the loss of several of the incisors, above and below. Deglutition unimpaired."

II. *Removal of a Tumour of the Rectum by the Elastic Ligature.*—I was recently consulted in the case of a lady of this city suffering from a tumour of the rectum. It was attached to the organ about an inch and a half above the verge of the anus by the cervix three-fourths of an inch in diameter. The tumour was about three inches in length and two inches in diameter. It had no epithelial investment like that of an ordinary hemorrhoidal tumour, but had the appearance of a sponge of loose texture saturated with blood. She could expel it at will, and it generally came down when she evacuated the bowels and had to be returned, which was easily accomplished.

A little blood was lost on those occasions, but there had occurred no copious hemorrhage. She suffered but little pain, but much mental uneasiness. She had used some remedies, such as are employed for hemorrhoids, but without effect. I could not regard the tumour as malignant, it having none of the characteristic pain of cancer; nor was the cancerous diathesis present.

I determined at once to apply the elastic ligature. I used a cord of gum-elastic about the size of a number 2 catheter, wrapping it six times round the neck close to the surface of the bowel, and tied it with a firm knot. I then returned the tumour into the bowel.

On visiting her the next day I found her complaining of very little pain, and the discharge of blood was very slight. On the third day the report was the same, and thus on, every day improving until, on the 21st day, the tumour was discharged without the slightest hemorrhage or any pain.

It is now a week since the discharge of the tumour, and the patient reports herself perfectly well.

In this case I think the wrapping of the cord five or six times round the neck of the tumour was important, as it gave to it much more compass of contraction, and rendered the constriction more uniform and constant. The gum-elastic cord is, moreover, non-absorbent and imbibes no putrescent matters.

I consider the use of a gum-elastic ligature, as illustrated by this case, an improvement of no small importance in surgery.

III. *Removal of the entire Uterus by Ligature and Knife.*—It is some thirty years since I was called to Mrs. Linthicum, living about four miles from Baltimore, suffering from inversion and complete prolapsus of the uterus. It had been caused, many months before, by severe traction on a retained placenta. It had been found impossible to reduce it immediately after, and, when I saw it, had been so long strangulated and hypertrophied that any attempt to effect its replacement was out of the question. Whenever she menstruated, the menstrual secretion would be seen exuding from the mucous lining of the uterus.

The patient had suffered so long from this condition of the organ, especially from the heavy traction of it, as she made efforts to keep about,

and the irritation caused thereby, that her health and strength were greatly impaired. At the time I saw her she was confined to bed, and it was manifest that, unless something could be done for her relief, she must soon sink. But I was apprehensive that, if I at once severed the neck with the knife, fatal hemorrhage would result. I determined therefore to ligate its neck with a flat ligature (tape-like), tying it with sufficient tightness to greatly impede the circulation, and diminish the volume of the neck preparatory to its section by the knife. I continued to increase the constriction daily for three days, the tape deeply impressing the neck; but the irritation became so great that I was compelled to incur the risk of immediate amputation. Accordingly, I made the section of the neck with one stroke of the knife. The stump was immediately retracted within the vagina, and a pretty copious gush of blood resulted. The flow was from an indefinite number of small vessels, which circumstance, together with the retraction, greatly embarrassed my efforts to secure the arteries. I was obliged to rely mainly on styptics and pressure, filling the vagina with a tampon, and supporting it with a T bandage. The patient, however, from irritation and loss of blood, became exceedingly prostrated, and I almost despaired of her recovery. On the fourth day she began to rally, and shortly recovered.

She removed from her country residence, and I never saw her again. She died some five years after the operation, from maladies bearing no direct relation to her uterine trouble.

I learned from the physician who attended her, that she regularly menstruated, though scantily, after the operation. I have the tumour now in my collection.

Had I been then acquainted with the use of the elastic cord, I doubt not that I could have removed the organ without the use of the knife, and with far less pain and peril to the patient.

ART. XIV.—*Syphilitic Intra-cranial Disease.* By C. ELLERY STEDMAN, M.D., and ROBERT T. EDES, M.D., of Boston.

A. B., aged 32, single, yeoman U. S. Navy, entered Boston City Hospital 24th October, 1871, in the service of Dr. C. E. Stedman. The hospital record made by Dr. C. E. Wing, then house physician, is as follows: Family history rather obscure. He entered the navy thirteen years ago, and soon contracted gonorrhœa, which he has had several times. He does not know that he has had a sore on the penis, but has noticed abrasions at times, and thinks he may have had syphilis; was salivated ten years ago when he had yellow fever, and has taken no mercury since. He thinks he recovered perfectly from the results, but the gums now recede much from the teeth. Is rather bald, but never had any particular falling out of hair, and never noticed any eruption on skin. There are small hard glands in neck and groin, and another small one at the left elbow, none of them tender. Fifteen months ago he had ulcers in the throat, which were "burned with caustic;" these returned a year ago, when he was told he had syphilis, and took iodide of potass. with relief.

Six months ago he began to have "trouble in chewing" on the right side of jaw; a month later was taken with pain and numbness in right side of face and about right eye, and had three teeth extracted without relief; one month afterward "eye became affected." Then went to Rio Janeiro in a man-of-war, where, on account of increase of his disease, he was discharged, and has just returned home, "having been treated like a dog on the passage." He has taken much laudanum to gain relief from his great pains.

Patient in bed, much emaciated, weighing, he thinks, less than 100 pounds. Pulse 84; respirations 20; temperature 100°. Ptosis of right eyelid, which, however, he can overcome for a short time by trying. Tarsal adhesive inflammation. Cannot turn right eye inwards, or upwards and outwards; the other movements seem normal. There is constant numbness and some aching in parts supplied by the fifth cranial nerve of right side. He is troubled by mucus collecting in right nostril, and has slight deafness of right ear. The pupils are normal. Appetite good; bowels regular; micturition free; tongue pretty clean. Complains of pain in all joints; no apparent paralysis of limbs. He was put on twenty-grain doses of iodide of potass. thrice daily, and morphia *pro re nata;* and there was marked improvement. On the 28th he complained of some pain in the left side of face and body, which gave him a bad day. Around the left eye there is considerable redness and swelling, but no pain.

30*th.* Has had fair nights, under moderate doses of morphia. This morning has had some pain about the left eye, but the redness had almost gone; complains of anorexia. Pulse 104; respirations 20; temperature 99.2°.

31*st.* This afternoon patient finds that the sight of the *right* eye is almost gone; can just recognize the house physician. No pain of right eye of any amount, but the left eye continues painful. Now takes thirty grains of iodide of potass. thrice daily.

November 1. Says that with the right eye he can only see out of the "inside corner," and that not distinctly. The numbness of the right side of face continues; only slight pain about left eye to-day. He can now raise the eyelid freely, and the motions of the eyeball improve. An ophthalmoscopic examination of the right eye by Dr. Williams shows "retinal veins engorged; arteries small, and here and there obscured by exudation; papilla somewhat pushed forwards, and its outline indistinct."

3*d.* Sore throat, salt taste in mouth, eruption like acne on left face; the iodide omitted.

6*th.* All movements of lid and eye improved, and vision restored to the right eye; the numbness of right face much less, so that he says he "can feel pain as he used to." Still a little pain about both eyes.

8*th.* This day complains of considerable pain around *left* eye, and its vision is affected. Throat not sore. The iodide resumed in ten-grain doses. The ophthalmoscope shows the same changes in the left eye that were observed in the right, 1st November. Both pupils dilated.

10*th.* Much pain in both eyes yesterday afternoon, requiring several doses of morphia. This morning the right temple swollen, and several tender swellings on forehead.

13*th.* The swellings nearly gone. Had headache and vomiting yesterday. To-day some "stiffness" of right side of face, felt perhaps before, but not mentioned. The tip of the tongue is turned a little to the left when protruded, but not much. Still requires morphia.

18*th*. Vomiting and nausea each morning for several days. The iodide has been omitted again. A loose tooth was removed. The circumorbital pains are less; sees better with left eye than with right.

21*st*. Nausea checked, and pain almost gone, except from front teeth in lower jaw which are bare to the roots. Patient has gained flesh since his stay in the hospital, and looks like another man. He can, with a little exertion, move the right eye as well as the left; he is able to read the newspaper nicely with the left eye, and can see pretty well with the right; is up and dressed daily, and anxious to go home.

22*d*. Iod. pot. gr. v. ter die.

23*d*. Feeling hearty; eruption again appearing on face. Discharged.

December 9. Readmitted; continued to improve till twelve days ago, when for the first time he slept in a cold room on a bitter cold night, and next morning had pain "all over head" which lasted till two days ago, when all pain, except about the right upper canine tooth, ceased. Four days ago when applying cerate to eyelid he found he was putting it directly on the eyeball, and then for the first time discovered that there was loss of sensation there and in the anterior half of right side of head; the tooth was tender and the adjacent gum easily bleeding. The patient's eyeball can be freely touched without his feeling the contact; the conjunctiva a little injected and right side of face looks a little swollen. Has taken the iodide pretty faithfully since he left the hospital, and shows the effect by the eruption on the face. For the last three or four days he has vomited "yellow stuff" every morning. General health much improved; a small bit of dead bone came from the socket of a tooth drawn when he was in hospital before, several days after leaving it; has trouble in chewing; functions of body well performed; no febrile symptoms.

11*th*. Loss of sensation not complete, of parts described above; right temporal muscle much smaller than left, so that it can hardly be felt; right upper canine and lateral incisor extracted.

13*th*. Face nerve feels natural.

14*th*. Examined with ophthalmoscope by Dr. Wadsworth; nothing abnormal observed.

16*th*. Patient says he feels all "as it ought to be," except tenderness in gums from loss of teeth, and eye is "still queer, but coming all right." Discharged at his own request.

During the winter he lived in Roxbury, where he was attended by Dr. Stedman. He had almost constant pain over right eye, and took morphia in unknown doses; he was readmitted to the hospital

March 12, 1872. Service of Dr. Borland. The record states that the sensation of the face was normal, but the cornea of right eye could be touched without feeling; the tongue protrudes in median line; constipated, but otherwise feels well; temperature 98°; pulse 84; respiration 22.

23*d*. Says that he has no pain when taking large doses of iodide of potass.

30*th*. Discharged relieved.

During the summer he was treated as an out-patient for ulceration of cornea of the right eye, but was otherwise sufficiently well to effect an insurance on his life; he was admitted again to the hospital

August 29, 1872. Service of Dr. Edes. It is recorded that patient talks indistinctly and his statements cannot be relied on; says that since his last discharge from hospital his health has been poor and he has been growing worse lately. Yesterday he had diarrhœa and vomiting, which

continue; is in bed much emaciated; extremities cold; pulse 96; tongue coated; no appetite; much thirst; two or three dejections daily.

September 4. Ophthalmoscope showed fundus of each eye normal.

5*th*. Mouth drawn to the right; cannot move left side of face as well as right.

25*th*. Discharged.

Mr. B. boarded in a bleak spot in Dorchester during this very cold winter, and had a cold room; he gradually failed, losing his faculties, sensation, and motion; he died 25th February, 1873. The autopsy was made by Drs. Edes and Stedman.

Notes by Dr. EDES. All organs appeared to be healthy, except the lungs, the upper portions of which were studded with small tubercles, and the brain surface and substance somewhat congested; substance of the brain hard. A considerable amount of serum in the ventricles. In the *right* middle cerebral fossa the apex of the temporal lobe was adherent and softened, so that upon removing it small fragments remained attached to the dura mater. This condition extended over a space about an inch in diameter, lying partly over the Gasserian ganglion; dura mater thickened, but the bone beneath it appeared healthy.

Gasserian ganglion decidedly thickened as compared with that of the other side; optic chiasm surrounded with lymph, which was especially abundant upon the right optic nerve; upon the arteries of the Sylvian fissure upon both sides were seen white or thickened patches in the walls. In one or two places the arteries were covered with an exudation of lymph. Two bloodvessels on the posterior pyramids, one upon each edge of the floor of the fourth ventricle, showed similar thickened portions, especially on the left side.

On microscopic examination of the fresh specimens the *left* (comparatively healthy) Gasserian ganglion contained, besides nerve fibres and cells, numbers of small, round and oval (indifferent) cells. The right contained more of the same cells, some spindle cells, and more old fibrous tissue.

The soft substance adherent to the cerebral surface of the dura mater was finely granular, and contained round and oval nucleated cells. No healthy pyramidal cells were seen. Some yellow pigment in the course of the vessels. In one place a group of very darkly granular triangular cells was seen, evidently cerebral from their shape, but not presenting the usual appearance of fatty degeneration. It seems possible that the degeneration was of a calcareous character.

Sections of specimens hardened in chromic acid and alcohol showed a much greater abundance of connective tissue in the right Gasserian ganglion than in the left. Nerve cells and fibres were distinct in both. In the right, however, the single cells seemed to be somewhat more separated from each other. No clearly defined difference in the appearance of individual cells could be made out. The number of pigmented cells seemed larger upon the left. Pigment granules not in the nerve cells were seen on both sides.

Sections were made of the thickened arteries, especially of one not mentioned above, which was afterwards found at the base of the brain, partially embedded in the cerebral substance. The best starting-point in the examination of these sections is the muscular coat, which presents its normal appearance. Externally, we find a layer of many cells mostly round or oval, but in many places surrounding the *muscularis*, and evidently replacing or representing the adventitia. There is, however, no

distinct limitation, but the accumulation of cells spreads out upon both sides into the pia mater, and sometimes embraces many smaller vessels. At the point of contact of the artery with the cerebral surface and opposite to this, the cellular layer is less thick, and probably here represents pretty accurately quantitatively the *adventitia*.

Internally to the muscular coat, forming sometimes a ring of uniform thickness, and sometimes much thicker on one side than another, we find the *intima*, composed of parallel bundles of tissue with circular and oval spaces. Many or most of these spaces are occupied by a body which probably represents a nucleus. The spaces are more abundant and larger at the edge nearest the lumen of the artery and furthest from the *muscularis*. In some places these spaces or cells present very much the appearance of several irregular layers of epithelium lining the artery. The inner portion of the *intima* is stained with blood. Where the intima is most hypertrophied, the lumen of the artery, if we regard the circular fibres of the *muscularis* as occupying the normal position, cannot exceed one-half its former diameter, or one-fourth of its area.

Immediately beneath the artery, imbedded in the brain-substance from which most of the sections were made, the cerebral substance appeared, as it were, crowded, the outer layer being no longer distinguishable at this point, and the cellular elements being increased in number. The smaller vessels penetrating the brain may have had the nuclei of their sheaths somewhat increased in number, but this change was at any rate not very marked.

The changes in what is here spoken of as the outer layer of the intima, according to Kölliker, correspond quite nearly to those spoken of by Cornil in the inner layers of the middle coat in varicose veins. The structures described are undoubtedly similar. Cornil, however, states that the inner layer is distinctly marked off from the hypertrophied connective tissue of the media, which was not the case in our specimens; a difference possibly to be accounted for by the difference in the form between the epithelium of veins and arteries; the latter being longer and more spindle shaped.

In the arteritis described by Charcot and Bouchard, in connection with miliary cerebral aneurisms, the proliferation seems confined, or nearly so, to the external coat of the artery, the internal being slightly if at all affected.

This case presents several points of interest, beside the correspondence between the more prominent symptoms observed during life and the lesions discovered after death, which is sufficiently obvious.

The lesion of the ganglion here observed, namely—the hypertrophy of connective tissue, seems to be almost the only one to which the outlying ganglia are liable, except the atrophy of the fine nervous elements, which is, after all, probably a mere consequence or second stage. This atrophy could not be distinctly made out in our case.[1]

[1] Since the writing of these notes an article has appeared by Petrow (*Virchow's Archiv*, 1873, lvii. 121, and *Centralblatt für die Medicinischen Wissenschaften*, 1873, p. 510), upon the changes of the sympathetic ganglia in persons affected with constitutional syphilis. He finds the interstitial tissue thicker and denser than normal, the nerve cells being more or less compressed and deformed. The nerve

The nervous and cerebral disorders associated with constitutional syphilis are interesting both in a theoretical and especially in a practical point of view, since symptoms of equal severity justify a far more favourable prognosis and are far more amenable to treatment when consequent on syphilis, than when the result of some non-specific lesion whose precise character it is usually difficult or impossible to diagnosticate. These symptoms are usually attributed to and in fact are very generally produced by syphilitic neoplasms or gummata, or by syphilitic periostitis. The latter mode is shown in our case so far as the lesion of the fifth pair is concerned.

It would certainly seem, however, that arterial lesions like those observed in this case must play an important part in the production of symptoms, and a recent author to whose writings I regret not to be able to refer more definitely, has suggested that some of the characteristics of syphilitic brain disease, and especially the rapidity of variation in the severity of the symptoms, and their frequent paroxysmal character may well be accounted for by supposing them to depend on vascular derangement. We can easily see how those variations in the size of the cerebral arteries which we have every reason to suppose are constantly occurring under the influence of the vaso-motor nerves, and which when the artery is healthy produce only normal physiological changes in the blood supply, may when their calibre is reduced to one-fourth—give rise to a more or less extensive and complete anæmia, and its consequent symptoms. Such might have been the case reported by Passavant. (*Virchow's Archiv*, xxv. p. 170.)

The permanent diminution in the blood supply too can hardly be without effect, and may account for the condition of dementia or "paralysie générale," sometimes observed in syphilitic diseases, and indeed approached in our own case.[1]

The connection between syphilis and aneurism too is a subject not without interest. Although such a connection is asserted, as for instance by Aitken, the causal nexus does not seem in all respects clear. Cases like the present, taken in connection with the views expressed by Virchow, and enlarged upon by Mr. Moxon (*Guy's Hospital Reports*, 1871–72), namely—that atheroma is not primarily a degeneration, but a chronic arteritis—would seem to show that the relation between the syphilitic

fibres may also be atrophied. The nerve cells contain more than the normal amount of pigment, and their protoplasm has undergone a colloid degeneration. The connective tissue cells forming their capsules are proliferated, and have also a peculiar homogeneous structure. These changes are compared to the interstitial inflammations caused by syphilis in other organs.

[1] Dr. Zespersen, in examining the records of 123 hospital cases of "general paralysis," finds records of constitutional syphilis in 83, a possibility or probability of it in 25, and no data in the remainder. In 34 cases of his own, constitutional syphilis was found in 33 and the 34th had had a chancre. The time elapsing between infection and the beginning of the paralysis varied from 5½ to 20 years, the average being 12.—*Journal de Thérapeutique*, Decembre 10, 1874, p. 908.

dyscrasia and aneurism is by no means a distant one. Mr. Moxon, indeed, doubts whether the cases of aneurism cited by Aitken in support of his view are anything but coincidences, and this is of course possible with the arteritis in our own case. The undoubted specific history, however, the repeated though temporary improvement under treatment, the peculiar character of the symptoms, the age of the patient, the occurrence of the arterial lesions in various portions of the brain, and in connection with others more generally recognized as syphilitic, certainly give a high degree of probability to the view that the connection between constitutional syphilis, and the chronic endo- and ecto-arteritis was more than an accidental one.

Boston, November, 1874.

ART. XV.—*On the want of Symmetry in the Length of Opposite Sides of Persons who have never been the Subjects of Disease or Injury to their Lower Extremities.* By WILLIAM C. COX, M.D., of Norristown, Pa.

WITHIN the last few years much has been written concerning the advantages and disadvantages of certain forms of apparatus for the treatment of fractures of the lower extremities, each one being advocated to the exclusion of other forms, as producing better results in regard to the amount of shortening ensuing therefrom. The results in some of the cases being very remarkable, and having noticed that the pantaloon leg on one side became worn much sooner than that of the opposite side, it occurred to me that perhaps there might be a difference in the lengths of the opposite lower limbs in persons who had never received any injury to that part of the body. I proceeded to measure a number of such persons, and found while in some the length of their limbs was equal, in others it varied from $\frac{1}{8}$th to $\frac{7}{8}$th of an inch. There does not seem to be any uniformity in regard to one or the other side being the longer, twenty-three having the right side longest, twenty-five the left side longest, and six having no difference in the two sides. In taking the measurements of lengths of the lower extremities we need only a reliable tape measure, and a firm level surface for the person to lie upon. Before proceeding to measure we should be careful that the person lies flat on his back, and that a line drawn between the crests of the ilii should be parallel with the surface on which the body rests, and the limb on one side should have the same relation to the pelvis as that of the opposite side, and both should be as near in a line with the body as possible. We may place the initial end of the measure between the teeth, on top of the sternum, on the symphysis pubis, or on the anterior spinous process of the ilium. The latter is the point generally used, and the distance from this, or either

of the above-mentioned points to the internal malleolus will give the length of that side. We find most difficulty in taking the measure of very stout persons and young children. I prefer the tape measure to any apparatus for measuring that I have seen, on account of its simplicity, and its being adapted to all cases. From the table, which contains the measurements so far as obtained, it will be seen how often we must be disappointed if we expect to find no difference in the lengths of the opposite sides after fracture of the lower extremities even of the simplest character.

Name.	Age.	Right side longer.	Left side longer.	Name.	Age.	Right side longer.	Left side longer.
J. R.	38	¼ inch		D. M.	45	½ inch	
P. M.	35	.....	½ inch.	J. N.	35	0	0
F. W.	37	.....	⅝ "	C. D.	25	½ inch	
P. D.	51	¼ inch		J. B.	21	.....	½ inch.
G. H.	19	.....	⅝ inch.	G. S.	29	.....	⅝ "
G. K.	14	.....	⅝ "	C. N.	35	.....	½ "
J. S.	59	.....	½ "	J. N.	24	½ inch	
M. L.	50	0	0	A. S.	23	.....	¼ inch.
T. E.	22	¼ inch		J. S.	37	¼ inch	
G. L.	28	.....	¼ inch.	J. A.	26	⅛ "	
J. H.	23	.....	¼ "	A. G.	22	.....	½ inch.
F. W.	21	.....	¼ "	P. D.	25	¼ inch	
D. H.	68	.....	¼ "	S. E.	33	0	0
J. F.	24	.....	⅛ "	C. D.	55	0	0
M. F.	25	⅛ inch		J. K.	23	⅛ inch	
M. O.	28	.....	¼ inch.	O. J.	35	⅛ "	
M. C.	45	⅛ inch		A. L.	29	⅛ "	
E. F.	40	⅛ "		T. P.	64	.....	⅝ inch.
E. G.	55	0	0	A. D.	22	.....	⅛ "
R. C.	42	½ inch		A. M.	23	¼ inch	
P. L.	23	¼ "		L. A.	29	.....	¼ inch.
D. T.	47	.....	¼ inch.	W. H.	42	⅛ inch	
J. B.	54	⅛ inch		W. C.	26	.....	¼ inch.
S. P.	48	.....	¼ "	F. W.	26	.....	½ "
J. S.	61	¼ inch		T. B.	34	0	0
J. H.	52	½ "		R. B.	43	.....	⅛ inch.
T. B.	29	¼ "		W. E.	2	.....	⅛ "

ART. XVI.—*Extensive Laceration of the Hand, caused by the Explosion of a Bottle of "White Gunpowder" while held in the Hand.* By B. J. D. IRWIN, M.D., Surgeon and Brevet-Colonel, U. S. Army.

THE following case of severe traumatic injury presents many interesting features in connection with the severity of the lesion, the nature of the treatment persued, ending in almost complete restoration of the functions of the injured member, and affords another striking example showing the imperative necessity for unceasing caution while manipulating the oxy-salts of potassium and chlorine, or analogous explosive compounds.

The injury about being described was caused by the explosion of a compound known as "white gunpowder," a substance in common use in Mexico and others of the Spanish-American republics, and consisting of ferrocyanide of potassium, loaf sugar, and potassium chlorate $= K_4Fe''Cy_6 + C_{12}H_{22}O_{11} + ClO_3K$.

Shortly after noon of November 12th, 1874, Professor K. was engaged in his laboratory demonstrating to a class of students the character and pyrotechnic properties of various chemical compounds used in the arts and in *civilized* warfare. After the explosive nature of a mixture of potassium chlorate and sugar had been shown by means of a drop of sulphuric acid, the professor took a bottle containing between three and four ounces of white gunpowder, and essayed to pour therefrom a few grains on a small wooden slab, placed within two or three feet of where the mixture of chlorate of potassium and sugar had been exploded, but the contents had barely touched the wooden surface when sudden and violent ignition took place, the flame passing upwards and into the bottle, which was held about four inches above the slab, and a terrific explosion of the whole contents took place, shattering the vessel and scattering the fragments in all directions, and with sufficient force to break and damage many of the apparatus and fixtures at several yards distance. Upon first impulse the cause of the disaster was surmised to have been the result of spontaneous combustion, or as a sequence of the percussion produced by the fall of the powder from the bottle to the slab, but subsequent investigations rendered it more than probable that the accident was caused by the contact of the powder with a particle of sulphuric acid that might have dropped from the glass rod used to carry the acid to the mixture previously experimented on, or that might have been blown to that point by the former explosive experiment. The atmosphere of the room was supercharged with peroxide of chlorine evolved during preceding experiments. To all these may be added the possibility that the friction produced by pouring the rough granules of powder through the ground mouth of the bottle may have been the source of ignition. Although it is stated[1] that this powder will not explode by friction or concussion, requiring contact with red-hot flaming substances, yet molecular change may have rendered the former modes possible, as this specimen had been prepared some five years previously, during which time it may have acquired properties differing materially from the article as ordinarily found. The force of the explosion was such that small particles of the shattered bottle impinging on the convex surface of thick heavy glass vessels made perforations therein similar to those usually produced by a gunpowder projectile when fired through glass at close distance. Two or three of the students seated on the front seats, received contusions and slight flesh wounds from small fragments of the glass.

The point of greatest resistance to the explosive force was the centre of the palmar aspect of the right hand of Professor K., the palm thereof having been rent and torn into numerous shreds, the thumb disjointed at its carpo-metacarpal attachments, the arteries constituting the superficial and deep palmar arches were dissevered and poured out their contents freely, and the muscular tissues were bruised and contused to an extreme degree. Being close by at the time of the explosion I saw him a few

[1] *Vide* Wagner's Technology, p. 154 *et seq.*

moments afterwards, and, having wrapped the hand up temporarily, had him conveyed to his quarters close by. Considerable shock having been produced, brandy and water were administered. Two vessels required ligation, and hemorrhage from several small branches was controlled by torsion or the application of the liquid persulphate of iron. Some twenty silver wire sutures were required to bring the lacerated points of the integuments together, as far as it was practicable to do so, after which the wounds were dressed with lint saturated with carbolized glycerine, one volume to seven, covered with oiled silk and a roller bandage. The limb was then placed on a suitable splint, the fingers and palm extended, and the whole supported by a handkerchief sling suspended from the neck. A fragment of glass had laid open the ultimate joint of the little finger of the left hand, and there were two extensive lacerations of the ring finger of the same hand. Arterial hemorrhage from the little finger was controlled by the application of persulphate of iron, after which the wounds in these fingers were dressed with the carbolized glycerine and suitable bandages. The patient having a strong repugnance to chloroform, anæsthesia was not resorted to; nevertheless, he bore the pain and suffering attendant on the necessarily tedious process of adjusting the dissevered parts with remarkable patience and fortitude.

8 P.M. Has been quite nervous and restless. Had his clothing removed and found four small contused wounds on the right leg and thigh, one of which had bled a considerable quantity without detection; complains of a sense of fulness about the right hand. Some oozing of blood having taken place, I removed the outer bandage and substituted a many-tailed bandage therefor. Half a grain of sulphate of morphia was administered and quiet enjoined. An hour later I saw him again in company with his relative, Professor E R. Peaslee, and repeated the morphia, after which I left him with injunction to court sleep by repose and quiet.

13*th*. 8 A. M. Slept about four hours during last night, but not until after two and a half grains of morphia had been taken to induce sleep. Complains of intense pain in the hand, shooting from one point to another. Opened the outer dressing and saturated the under layers of lint with carbolized glycerine. Ordered milk-toast and an omelet as diet, and perfect quiet enjoined.

14*th*. Feels very comfortable, having slept all night and the hand being almost free from acute pain. Carbolized dressing applied through the original dressing so as not to expose the wounded surface to the action of the air.

15*th*. Continues to do well. Sleeps well, appetite good. Bowels moved by Seidlitz powder.

16*th*. Doing well. Appetite excellent. Repeated dressing, and allowed soup, chicken, quail, fruit, and milk, as may be desired.

17*th*. Sat up in an easy chair some eight hours. Continue diet and treatment same as yesterday.

18*th*. Did not sleep as well as usual, and complains of failure of appetite. Ordered fid. ext. cinch. arom. *ter in die*. *Haust. cit. magnes.* to move bowels, which show a tendency to constipation—potassium bromide gr. xx at bedtime to be repeated *pro re nata*.

19*th*. Feels better, but complains of loss of appetite. Continued treatment, and ordered fresh cider at his request.

20*th*. Somewhat better. Sat up several hours during the afternoon of

yesterday. Appetite capricious. Ordered raw oysters, cream, and milk *ad libitum*.

21*st*. Slept better and feels better. Beef-tea and a glass of sherry twice a day.

22*d*. Some slight oozing through dressing; lifted up the edges of the inner dressing and poured carbolized glycerine directly on the wounded surface, which appears to have reunited without suppuration.

25*th*. Continual improvement—feels in excellent spirits; sleeps well, good appetite, no pain in hand.

While sitting chatting with the patient he sprang in his seat, as if he had been stung by a hornet, and said he had a violent and sudden twinge in the nerves of the fingers, which occurred again in a few moments, but with less severity. States that he had two or three twinges on the preceding day, but paid no attention thereto, as they were not severe, and he imagined they were caused by the process of reunion. Ordered potassium bromide gr. xv *ter in die*, and continued former treatment. At my evening visit found him comfortable and more cheerful than usual, although disturbed by an occasional violent twinge or jerk in one or other of the fingers of the right hand. From these symptoms I deemed it prudent to open the dressing and examine the wounds, in order that I might act as their condition might indicate. Assisted by Dr. Fitzgerald, U. S. Army, I removed the dressing, and was much gratified to find the wounds united by first intention at almost all points, presenting a perfectly healthy condition and promising most satisfactory results.

The centre of the palm shows healthy granulations where the integument has been completely destroyed. Removed with caution and without pain the silver sutures, but the two ligatures were allowed to remain, not having become detached yet. Painted the palmar aspect of the fingers with a mixture of tincture of iodine ℥j, morphia sulph. gr. viij, with three or four coatings; then reapplied the carbolized dressing on successive strips and layers of lint soaked in a solution consisting of five parts of glycerine to three of carbolic acid. No pain was caused, and no notice of the disagreeable tetanic sensation up to ten o'clock, at which time I left him for the night. Potassium bromide gr. xx, to be taken *pro re nata*. Nothing transpired to cause the patient to even surmise that I had any suspicion of impending danger.

26*th*. Found him comfortable at my morning visit after having had a good night's rest without having had to resort to the sedative. The twitching has almost disappeared, there being nothing more than an occasional formication about the fingers. Repeated the application of the iodized morphia and carbolized glycerine. He says he feels great mental relief at the removal of the sutures, as he feared the process would prove a very painful ordeal. Evening. Passed a good day—no pain or twitching worth noticing. Bowels moved by citrate of magnesia; appetite excellent—beef-tea, milk, cream, and similar nutritious diet allowed according as they are fancied.

27*th*. Passed another comfortable night. No pain in hand more than a slight feeling of discomfort. Continue treatment as before.

28*th*. Continued improvement. Remained up until ten o'clock P.M. last evening. Slight pain in fingers, to relieve which the stronger carbolized dressing was applied.

29*th*. One ligature came away, the other not yet detached from bottom of wound. Removed dressing from fingers of left hand, and found the

wounds in the little and ring fingers completely healed; no evidence of the slightest suppuration having taken place during the reparative process.

December 1. Steady improvement. The wounds in the lower limbs are not yet healed, as the dressings had to be removed and re-applied daily, owing to the difficulty of keeping them in position. Unlike the wounds in the hands, these have suppurated and are healing over by granulation. During this process a series of phlegmons have succeeded each other in the vicinity of the wounds in the thigh, and have caused a good deal of suffering and constitutional disturbance. Ordered cit. ferri et quin. f℥ij, fld. ext. cinch. arom., syrup. zingiberis, spirits vini gallici, aqua, āā f℥ij. M. A tablespoonful to be taken three times daily.

5*th*. While the patient was being dressed, secondary hemorrhage from the superficial palmar arch took place. Pressure on the radial and ulnar arteries restrained the flow of blood until assistance arrived, when the bleeding was controlled by compresses, lightly applied over those vessels, and by the application of a saturated solution of persulphate of iron to the mouth of the bleeding vessels.

8*th*. No return of hemorrhage—patient comfortable, with good appetite, and enjoys plenty of sleep.

12*th*. Continues to improve. The wounds in the right hand have entirely healed except a small spot in the centre of the palm, through which the ligature still hangs attached, its knot preventing its detachment by gentle traction. Went out to-day for the first time.

25*th*. The remaining ligature came away this day, leaving the hand in a much better condition than there was any reason to hope for under the most favourable expectations. The recurrence of boils on the thigh has continued to give much annoyance.

January 1. All dressings dispensed with from this date. The power of flexion in the thumb and fingers, and sensation in the second and third phalanges of the first, second, and third fingers, are considerably impaired. To overcome the former, gentle passive motion in flexion and extension is kept up daily, and for the latter a mild Faradaic downward current passed through the radial and ulnar nerves every alternate day. Despite the disadvantages of a highly nervous temperament and the extremely sensitive character of the extensive cicatrized surface, the condition of the hand and fingers continued to steadily improve, so that the professor was able to resume his professional labours, and was returned to duty on the 31st of the month, with the prospect of the limb ultimately regaining all its lost power.

Remarks.—When the extent, character, and location of the principal injury, the terrific force and shock that produced it, the age and temperament of the subject, the danger from tetanus in injuries of this nature, and the presence at one time of premonitory symptoms indicative of the advent of that fearful complication, are taken into consideration, the results obtained are far better than could have been hoped for under the most favourable circumstances. To the antiseptic treatment I believe the satisfactory progress and termination of the case are principally due. Had the usual course of removing the dressing from and exposing the wound once or twice a day to the air been practised, suppuration doubtless would have supervened, and with it the lurking danger from tetanus would have been

vastly increased, to say nothing of the constitutional effects likely to result from extensive suppurative inflammation. Had that course of treatment been pursued, the satisfactory results obtained could not have been secured, and, indeed, it is not beyond the range of probability that the sacrifice of the limb might have become necessary in order to preserve the life of the patient. The local anæsthetic effect of the carbolic acid added materially in maintaining the tranquillity of the patient, while preserving the wounds free from pyogenic tendencies.

January, 1875. *Status presens.*—The functions of the hand have steadily improved, and would be almost restored to perfection could the patient be induced to submit to suitable manipulations to produce complete flexion and extension of the fingers on themselves. Sensation has been gradually and almost fully recovered, a slight paresis being all that remains to indicate the places formerly deprived of feeling.

U. S. MILITARY ACADEMY, WEST POINT, N. Y.

ART. XVII.—*Description of a Splint for Combined Suspension and Extension in the Treatment of Fracture of the Lower Extremity.* By T. W. SIMMONS, M.D., of Hagerstown, Maryland. (With a wood-cut.)

THE combination in one apparatus for accomplishing two objects, extension and suspension, which separately have become highly esteemed in the treatment of fractures of the lower extremity, is the object of the instrument which I shall describe.

Experience in the treatment of fractures of the leg has not sustained the advantages of the flexed position over the straight.

The relaxation of the muscles while a fractured leg is held in a state of flexion, rather favours lateral displacement than otherwise; nor does it prevent, as has been abundantly shown, excessive overlapping and shortening, while, at the same time, it is most unfavourable to the application of any efficient method of extension at present known. In point of comfort the flexed position possesses no advantage over the straight.

The increasing favour which the principle of extension has received since introduced in 1824, by Dr. Luke Howe, has proved it to be important and almost indispensable in the treatment of fractures of the femur, in order to prevent inordinate overlapping of the fragments, to maintain apposition in a straight line, to subdue all perturbed action of the strong muscles to a state of quietude, and at the same time, render them agents of support. Extension can likewise be applied with great advantage to fractures occurring below the knee, as it sustains adjustment in a straight line without the need of tight dressing; this particularly

obtains when the fracture is seated at or near the ankle-joint, where but light pressure can be borne without soon becoming painful, and where lateral displacements are so liable to occur. It is not excessive, but moderate, uniform, and uninterrupted extension that is required to accomplish these results—extension sufficient to fatigue and overcome the contracting irritated muscles. Pressure made against the perineum and axilla by any of the counter-extending appliances in order to produce forced extension of a fractured leg, is altogether to be condemned as unnecessary, painful, and restraining, the weight of the body itself exceeding the power of extension required, somewhat, for example, in the proportion of 120–150 lbs. to 10 or 15 lbs., establishes at once all the counter-extension that could practically be desired, and by elevating the foot of the bed by three or four inches, it will be found to prevent, in a great degree, the tendency which is sometimes shown to move downwards in bed.

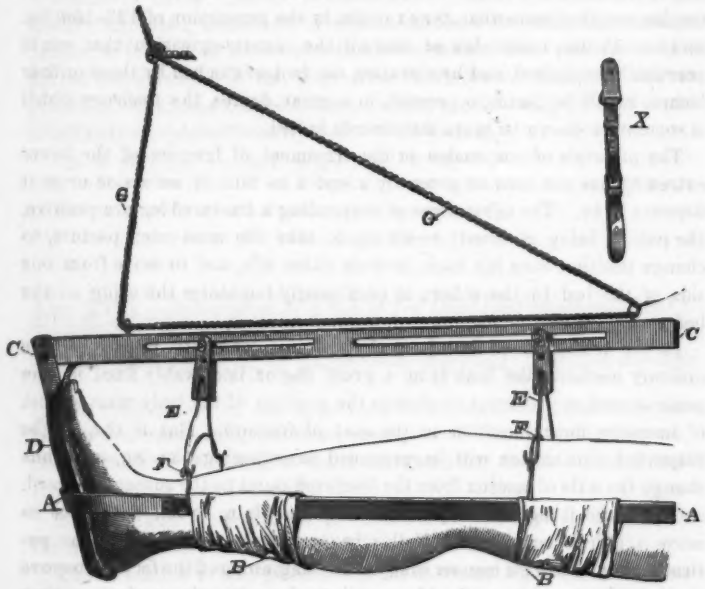
The principle of suspension in the treatment of fracture of the lower extremity has not been so generally adopted as that of extension or as it deserves to be. The advantages of suspending a fractured leg are positive, the patient being at liberty to sit up, to take the semi-erect posture, to change position from his back towards either side, and to move from one side of the bed to the other; it particularly facilitates the using of the bed-pan.

In the treatment of fractures of the lower extremity by any of the ordinary methods, the limb is in a great degree immovably fixed in one position, and any attempt to change the position of the body must almost of necessity impart motion to the seat of fracture. But if the leg be suspended, this motion will be expended in swinging the leg, and thus change the axis of motion from the fractured point to the suspending cord, and preserve it against displacement. There is a strong desire felt to move a painful member, and if this be prevented it must add to the patient's discomfort in a manner easily to be imagined, and the facility to move a painful fractured leg will add as much to the patient's comfort as that afforded by moving any other painful member, provided it does not disturb the seat of injury; suspension, therefore, not only allows the patient to move his body as comfort may dictate, but at the same time insures a freedom of motion to the injured limb which affords comfort and protects adjustment.

Suspension is, therefore, no less valuable than extension.—Several attempts have been made to combine these two principles, but in these the extension was made from a fixed point beyond the foot, as by cord, pulley, and weight, thus virtually tying fast the foot, while the leg was in suspension. Under this arrangement it is evident that the least swinging of the leg must change the line of extension to an angle with the long axis of the limb, thereby foiling its object, which can only be obtained by an apparatus that will move freely with the limb whatever its motion may

be, and maintain at the same time a constant power of extension in a direct line with the long axis of the limb.

In the year 1869, recognizing the importance of securing both suspension and extension, I devised, and had constructed during the winter of 1872, what I have termed the *Suspenso-Extensory Splint*, which was shown to Prof. Christopher Johnston, of Baltimore, Md., who approved its construction, and exhibited it to his class, at the University of Maryland, during the session of 1873–4.



The accompanying figure represents this splint. The horizontal bar CC is made $\frac{7}{8}$ in. thick, $1\frac{1}{2}$ in. broad, by 3 ft. in length, is joined to a foot-board D, of like thickness, $3\frac{1}{2}$ inches at widest part, above 3 inches at heel, by $13\frac{1}{2}$ inches in length, being somewhat shaped like the bottom of a last on its external surface. To this horizontal bar are suspended two side splints A, by means of four wire bearings E E, provided with a perforated attachment above, through which two thumb-screws pass, in order to raise or lower the limb that the foot may be brought in position to receive the foot-board. These side splints, being 1 inch wide, are to extend 2 inches from above the sole of the foot up the whole length of the limb; they are held parallel, and at any desirable distance between each other, by two arches made of strong wire twisted upon themselves, to form eyes F F, through which the bearings are hooked. A most important point to be

observed in its formation is the angle between the horizontal bar and foot-board C, which should accurately be one of 11½°, that the foot may maintain a natural and easy position without its being too much extended on the one hand, or held too erect on the other; and as it is very important to preserve this angle intact, the horizontal bar and foot-board should be firmly and immovably joined together. The figure X represents a leather strap and buckle, four of which may be substituted for the wire bearings, as seen in the above representation of the splints. By this modification, the horizontal bar, with foot-board, constitutes the entire instrument, which can be readily constructed by any ordinary mechanic, and is adaptable to almost any sized leg. These bearings are provided with loops below, through which the splints are to pass, before being bandaged to the limb. Simple plastering laths, or something similar, readily to be procured, will serve the purpose of side splints; and in order to prevent too much lateral pressure from them, a simple stretcher, made of light wood, should be placed between the opposite bearings and allowed to rest on the upper aspect of the limb. This arrangement, though not so elegant as the apparatus herein represented, combines the same principles. In case of compound fracture a side splint made of common hoop or strap iron, about 1 inch wide, should be used instead of a straight wooden side splint, as it can readily be bent with the hand to form a bracket or bridge to correspond with the wound and form a fenestra. This material, when well wadded and wrapped, is sufficient to fulfil the office of side splint in every other respect.

In the application of the suspenso-extensory splint I have adopted the following method, but every surgeon will most likely use his own taste and ingenuity in this respect.

The head of the bed upon which the patient is to be laid should be removed several feet from the wall, directly under a pulley which has been firmly fixed in the ceiling, so that in the beginning the leg will be suspended at a perpendicular to the pulley, and by degrees, as an increased extension is desired, the bed is to be removed towards its former position. Two straps of strong adhesive plaster, about 2½ inches broad by 2½ feet in length, are next to be applied on each side of the leg, so as to allow about one-third of their length to project beyond the foot, in order to embrace the foot-board. When the fracture is seated at or near the ankle-joint, a well-adjusted gaiter is the proper substitute for the adhesive bands, as the space from below the fracture is too short to admit of the plaster getting sufficient hold. After the side splints are well wadded and wrapped they are to be placed on each side of the leg, extending from two inches above the sole of the foot to the body. When the fracture occurs in the upper third or neck of the femur, the outside splint should be made long enough to reach some distance above the hip-joint, to be secured by a bandage passed around the body; from one of these side splints to the

other loop a bandage BB back and forth under the fleshy parts of the thigh and calf, where the greatest weight of the leg should be received, at the same time they will prevent the side splints from rising under the outside bandage when suspension takes place. After the bearings have been placed in proper position as afforded by means of two slots formed in the horizontal bar so as to equalize the weight of the leg between them without reference to the seat of fracture; then a bandage should be well applied from the ankle to the body. The leg should next be swung, and if the foot is found to be too high or too low to correspond with the foot-board, the bearings should be so adjusted as to secure this adaptation.

The extending bands A should now be brought firmly around the foot-board so as to hold the foot in close contact with it; and if at any time by their stretching or otherwise the foot is found to separate from the foot-board, the extending bands should be detached from it and reapplied as before, their adhesive properties will not be impaired thereby, but strongly unite with the wood even without heat. A short bandage should then be applied around the foot and foot-board, so as to be conveniently removed if necessary to readjust the extending bands, without disturbing the longer bandage.

In common with suspension and extension another important feature is combined in the splint, viz., the very perfect manner in which all tendency to eversion of the foot is overcome, the foot being secured to the foot-board, not only affords a firm rest for it in all directions, but it very effectually obviates the troublesome tendency to eversion which exists in nearly all fractures of the femur. In suspending the limb, the cord GG should be passed over the pulley from behind, and brought down to pass first through the eye fixed near the upper end of the horizontal bar, then along the bar to the second eye next the foot-board, then carried up vertically, to be tied to the descending cord. The cord should be long enough at its free end so as to be secured within reach of the patient, that he may elevate or lower the leg at pleasure. The power of extension is increased in proportion as the cord is made oblique, and for all practical purposes it is unnecessary at any time for the obliquity of the cord to exceed an angle of 45° to a perpendicular; but by the application of a dynamometer to the free end of the horizontal bar, the degree of extension exerted can be estimated when deemed necessary. By this principle of extension there is developed a very important and beautiful adaptability of power to resistance which is not to be found in any other principle of extension, viz.: When the limb is large and muscular, medium in size, or small and weak, the degree of extension produced will be always in proportion to the degree of extension required.

ART. XVIII.—*Report of a Case of Leukæmia, with an Analysis of Sixteen Cases in Relation to its Descriptive Pathology.* By GEO. A. MURSICK, M.D., of Nyack, N. Y.

VIRCHOW distinguishes two forms of leukæmia, viz., the splenic and the lymphatic, and remarks that they are not unfrequently combined in the same individual.

I have recently met with a well-marked typical case in which both the spleen and lymphatic glands were greatly enlarged, and which pursued its remorseless course to a fatal termination in spite of all efforts to stay its progress.

C. H. G., male, aged 21 years, father living and in robust health, mother died of phthisis pulmonalis. During his early years was not very robust, and at the age of puberty was threatened with pulmonary disease, which he finally overcame. I examined him on June 2, 1874, and upon inspection found him with an *asymmetrical skeleton*, the left half of his body being distinctly smaller than the right. The long bones of the upper and lower extremities measured three-fourths of an inch less in length than those of the right side, and were considerably smaller in diameter. In the fall of 1871, the glands on the right side of the neck commenced to enlarge, and have since continued to increase slowly in size until they now occupy the whole of the right side of the neck and axilla. The cervical glands of the left side commenced to enlarge about six months ago, and are now as large as walnuts; spleen very much enlarged; extends down as far as the umbilicus, and bulges out prominently below the margin of the ribs. Until within the last three months he has been up and about, but is now confined to his room; he has lost twenty-five pounds in weight during the past year; his complexion is pale and sallow, and he is profoundly anæmic; his appetite is, and always has been good; his strength is failing; has slight paroxysm of fever, and sweats some at night; neuralgic pains, quite sharp at times, shoot down the arms and side; his lungs are sound, and there are no dropsical effusions; early in May had a free epistaxis which has not since recurred; examined three specimens of his blood under a one-fourth inch objective, and found the white corpuscles very largely increased in number; also, globulines in abundance. The red corpuscles were positively diminished in number, and presented a shrivelled appearance.

These specimens were compared with the blood of his father, and with some of my own. The difference in appearance was quite striking, even to his father. The diagnosis being fully established, I determined to try the effect of iodine upon the glandular enlargement, as it had served me well in enlargements from other causes. Ordered: ℞. Potassæ iod. gr. v; tinct. chinchonæ co. ʒj, three times daily. The dose to be gradually increased until it reached xxx grs. per diem.

June 17. The glandular enlargement is very much reduced; spleen about the same; strength diminished; but appetite continues good; the neuralgic pains have been controlled by morphia sulph. q. s.; is taking gr. xxx of the potass. iod. daily.

22*d*. The glandular enlargements continued to decrease; feels weaker though he takes an abundance of food; has a copious iodic eruption upon

his skin; complains of severe pain in the region of the spleen, which is considerably reduced in size; reduced the dose of potass. iod. to gr. v, three times daily, and ordered two of Blancard's pills to be taken at noon; also, tinct. of cannabis Indica in half drachm doses *pro ne nata*, to control the pain.

28*th*. Sharp pains in the region of the spleen and in the abdomen continue; is very irritable at times; does not sleep well, and has some fever at irregular intervals; has had some diarrhœa, which was controlled by chalk mixture; spleen and glands of neck and axilla are much smaller, and he continues to lose strength; suspended the potass. iod. and ordered ℞. Quinia sulph. gr. v, and pulv. digitalis, gr. ij, morning and evening; to continue Blancard's pills, and to take spts. vini Gal. ℥iij daily; he takes a good quantity of food; meat, milk, eggs, fruit, etc. Frequent examinations of his evacuations have been made; they show the food to have been digested, as none passes from him as taken.

July 1. Is gradually growing more feeble, and is very restless and irritable; fever continues and is followed by sweats; the pain in the spleen continues, and there is some effusion within the abdomen. Does not sleep well. ℞. Pulv. Dover. gr. x, at night.

2*d*. Examined the blood again; found a slight increase of red corpuscles —they are no longer shrunken. *Urine*, scanty and high coloured, sp. gr. 1024, very acid; on standing it deposits an abundance of urates and mucus; no albumen.

7*th*. Emaciation increased; fever less; *sweats profusely* at night, *especially* on the *left side* of his body. Bowels are loose—the stools thin and fetid. The abdominal effusion has increased, and his face, hands, and feet look puffy; is more feeble; pulse 120; appetite continues good. Ordered ℞. Quinia sulph. gr. x, pulv. digitalis, gr. iv, morning and evening. ℞. Pil. Blancard, No. 4, daily. Continue Dover's powder at night, also to have brandy ℥iv daily.

10*th*. Bowels have been quite regular, has had but one evacuation during the past 24 hours. For the past two days has had great difficulty in urinating, and complains of pain at the neck of the bladder. Ordered hop poultices to abdomen, and ℞. Potass. bicarb. gr. xx, in solution every two hours, which relieved him for the time. Checking the diarrhœa has caused an increase of the fluid in the abdomen, which by pressure upon the bladder renders micturition difficult.

12*th*. Passes urine quite freely, and without pain. The œdema of hands, feet, and legs has increased; appetite fair; pulse ranges from 100 to 110; has but little fever, and does not sweat so profusely; is gradually growing weaker.

15*th*. General condition much the same. Ordered ℞. Ferri pyrophosphat. gr. ij; quiniæ sulph. gr. ij; strychniæ, gr. $\frac{1}{30}$; acid. phosphoric. dilut. ℥ss, to be taken in solution three times daily; also to take gin in place of the brandy.

21*st*. Bowels are quite loose; hands and legs are more swollen; abdominal dropsy increased. For the last three nights the fever has increased, and last night he was slightly delirious; pulse 140; takes sufficient nourishment and digests it.

23*d*. There is now general anasarca; his respiration is embarrassed from œdema of the lungs; diarrhœa increased; pulse continues about 140; fever less.

25*th*. Exhibits a great deal of mental hebetude and sleeps a great deal;

bowels very loose, but not sufficiently so to prevent an increase of the anasarca. I attribute the mental hebetude to œdema of the brain. Ordered R. Ammon. carb. gr. v; fluid. ext. juniperis, ʒj, every 6 hours.

27*th*. Appears much brighter to-day; passes urine freely and takes food with a relish.

August 4. The apparent improvement did not last long; he is gradually growing more feeble, and the general œdema is steadily increasing, in spite of the diarrhœa, which only serves to weaken him; passes but little urine. Ordered: R. Infus. digitalis, ℥iv, in divided doses daily; and Tinct. ferri chlor. gtt. xx, three times a day.

8*th*. Has been very restless during the past 24 hours, and is very feeble; respiration is much embarrassed by the pulmonary œdema, which is increasing. He died suddenly at 10 o'clock A. M.

No autopsy was permitted.

Remarks.—In the report of this case there will be found noted nearly all the symptoms and lesions included in the descriptive pathology of the disease. With a view to determine their frequency, I have carefully examined the history of *sixteen cases* reported by various competent observers. The result is as follows:—

The blood.—In all the cases there was found a large increase in the number of white corpuscles. Leucocytes with multiple nuclei and globulines with a single nucleus predominated, according as the spleen or lymphatic glands were most enlarged. A positive diminution of the red corpuscles was noted in some of the cases, but it is probable that this occurred in all of them.

The spleen was found to be enlarged in fifteen cases; the enlargement being attributed to hyperplasia of its interstitial stroma, or connective tissue. In a few cases it was found to be softened.

The lymphatic glands of either the neck, axilla, or abdomen, were enlarged in *nine cases* only—hyperplasia of the glandular tissue, with increased formation (hypergenesis) of cells. Pigmentary deposits in them were noted in three cases.

The liver was more or less enlarged in ten cases, the enlargement being attributed in some of the cases to "simple hypertrophy," in others to hyperplasia of its connective tissue, which is the better explanation. Vascular engorgement has also much to do with the increase in size of both liver and spleen.

Dropsical accumulation occurred in eleven cases; in many it was general (anasarca), in others it was noted as ascites, pleuritic effusion, œdema of the limbs, etc. It appears to be of the passive variety, and due to mal-nutrition and visceral obstruction.

Diarrhœa.—This is noted as occurring in *seven* cases only, and is attributed in some of the cases to irritation of the intestinal glands. It appears to be conservative in its character, an effort on the part of nature to relieve the system of its surplus fluid.

Fever followed by sweats is noticed in *six* cases, and is of the so-called

"hectic" or irritative type, occurring at irregular intervals, and is of low grade.

Hemorrhage occurred in *seven* cases, most often from the nasal cavities and intestines. It is noted as being cerebral in one case, as intra-peritoneal in another, and from an unhealed wound in another. It does not appear that it occurs as a consequence of the "*hemorrhagic diathesis*," as has been stated.

The condition of the appetite is stated in five of the cases as being good, in one case as ravenous, and in another as extraordinary. Pallor due to anæmia, more or less emaciation, a gradual failure of the vital powers, and finally death occurred in all cases. Heart clots and thrombi in the larger vessels are generally found post-mortem.

Whatever the precise nature of the disease may be, it is evident that profound structural lesions occur in the organs engaged in the elaboration of the blood, viz., the spleen, lymphatic glands, and liver, as well as in the blood itself; and though a sufficiency of nutriment is taken and digested, it is evidently not assimilated.

Whether leukæmia be a disease *sui generis*, or only a peculiar condition of a cachexia which shows itself under manifold variations, is a question still *sub judice*. I am inclined to the latter opinion. A temporary increase of the white corpuscles has been observed without any of the above conditions, or any serious consequences following; and, *per contra*, all the above conditions may be present without an increase of the white corpuscles, as in the conditions described as adenia, scrofulosis, Hodgkin's disease, pseudo-leukæmia, etc. There is also a form of anæmia, which has been designated as progressive or pernicious, which pursues a similar course, to a fatal termination, in which there is neither an increase of the white corpuscles nor any glandular enlargement. The appetite remains good, and an abundance of food is taken to the last, and in which all the cachectic symptoms noted as occurring in leukæmia, and other morbid conditions due to mal-nutrition, occur, viz., dropsical accumulations, diarrhœa, fever and sweats, hemorrhages, etc. I have observed one such case.

As to the treatment of leukæmia little can be said other than that a great variety of therapeutical remedies have been tried without avail. Tonics may aid in keeping up the appetite if it fails. Iodine or some of its preparations has had the effect of reducing the glandular enlargements in some cases; and, according to Da Costa, the hypodermic use of ergotine has caused a marked reduction in the size of the spleen. Niemeyer mentions a case in which hydropathic treatment proved of temporary benefit. In other words, the treatment is simply palliative.

ART. XIX.—*Case of Traumatic Aneurism, at the Bend of the Arm, cured by Flexion.* By H. F. MONTGOMERY, M.D., one of the Attending Surgeons at Rochester City Hospital, N. Y.

THIS case is reported, not for its originality, but to place on record another instance of a serious lesion successfully treated by a simple method.

Leopold S., aged 39 years, a native of Germany, was found near the brink of the Genessee Falls in this city, faint from loss of blood. He was taken to the police office, where it was discovered that a wound at the front of the elbow-joint of the left arm had been inflicted, not by an assassin as he first stated, but by himself, with a pocket knife, for the purpose of suicide. He was taken to the City Hospital at 5 o'clock A. M. on the 29th of October, 1874. The wound was dressed by the first clinical assistant resident at the hospital, and is described by him as follows: "Upon examination a transverse incision was found in the left forearm about three-fourths of an inch in length (depth not ascertained), immediately outside of the tendon of the biceps. Wound was dressed by putting in one suture and applying adhesive straps." The bleeding had ceased when the wound was first seen at the hospital. The patient was placed in bed.

The next day bleeding from the wound suddenly commenced with a rapid and large stream. Dr. David Little (Surgeon of 13th N. Y. V. Regiment in the late war), now one of the attending physicians in the medical wards of City Hospital, fortunately being in the house, was called into the surgical ward, and applied a compress and bandage, and directed them to send for the attending surgeon to ligate the bleeding vessel. When I arrived the bleeding was arrested, and pulsation at the wrist was felt. Therefore, in accordance with a generally accepted rule of surgery, I did not search for the wounded vessel. The dressings were not disturbed. There was no further hemorrhage after this.

November 15. I removed the dressings from this arm and found a granulating wound, and a tumour immediately below the wound, in the central line of the forearm, the size of an almond kernel, pulsating strongly, and with a decided thrill. Three methods of relief suggested themselves: 1st, to tie the brachial artery above the elbow; 2d, to cut open the sac of the aneurism, and to tie above and below the wound in the artery; or 3d, to pursue a plan, recently found successful, of treating traumatic aneurism in the same manner as in true aneurism, by compression and by gradual obliteration of the injured artery.

The first would endanger sloughing; the second would also, but in a less degree; the third had this advantage, that if it did not succeed the collateral circulation would be enlarged, and would diminish the danger of mortification should it become necessary eventually to tie the brachial artery. A firm compress was placed upon the brachial artery, and a bandage applied, from the fingers to and above the elbow, around the compress.

16*th.* The patient complained of the pain of the compress, which was removed and the following was substituted, after the exuberant granulation of the wound had been cauterized with nitrate of silver and covered with a small portion of lint. A bandage was applied to the hand and forearm, the hand supinated, and the forearm flexed upon the arm to its greatest extent, and held there by several turns of adhesive plaster around the

forearm and arm (first having placed along the back of the arm a portion of binder's board to divide the pressure of the adhesive plaster over a large surface). The immediate effect was to arrest the circulation through the artery at the elbow, as was evidenced by a failure to feel the pulsation at the wrist of the radial artery. After one week the dressing was removed, and the pulsation and tumour were both still obvious. The same dressing was reapplied, except that one turn of the bandage, around the arm and forearm, was carried above the joint and around the arm, and as often as the adhesive plaster stretched it was removed and tightened, so as to *keep the flexion up to its greatest extent.* The patient made but little complaint of the dressing, but was ordered a quarter of a grain of sulphate of morphia at night. On the 29th of November the dressing was again removed, the tumour and pulsation were both absent, but in place of them was a non-pulsating, hard, solid substance between the cicatrix and the joint, about the size of a large pea, just outside of the tendon of the biceps and near its insertion. The dressing was again applied, and continued to the 3d of December, when it was discontinued.

January 17. There is no appearance of the tumour, the wound is healed, and the pulsation at the wrist is feeble. The fingers are somewhat stiff.

From the history of this case, and by experiment, it is obvious that in most persons extreme flexion of the forearm upon the arm arrests the circulation through the brachial artery at the bend of the arm, *when the forearm and arm are bandaged.*

ART. XX.—*Case of Accidental Elytrorrhaphy.* By JAMES BORDLEY, M.D., of Centreville, Queen Anne County, Maryland.

THE subject of the following case of prolapsus uteri was a lady æt. about 47; the initiatory symptoms of which were developed during the irregularities attendant upon the "dodging time," and accompanying that act throughout, passing through the successive stages of prolapsus during the "climacteria."

From the frequent and almost constant state of engorgement and congestion present during that period, the uterus became much enlarged and very heavy; and as I was not permitted to use proper means during the time for its amelioration and relief, the natural result from the long inversion of the vagina and stretching of the uterine ligaments involved in its descent, was procidentia. When the patient saw that her case had grown so much worse, and when she found herself unable to stand upon her feet from the descent of the womb, and its consequent results, such as dragging upon the bladder, rectum, etc., and by its protrusion between the labia, producing such discomfort and impeding locomotion, she then, and not until then, gave her assent to the use of whatever instruments or means I might see fit to employ.

Then, as had been anticipated, I found great difficulty in procuring an instrument capable of holding the heavy organ *in situ.* Besides the unnatural weight of the womb, its great enlargement had so distended the vagina that it afforded no support or assistance to any pessary introduced, and as my object was to restore the parts to their normal state, that the treatment might result in complete cure as well as immediate relief of present symptoms, I was averse to use a pessary for that purpose

of such size as to keep the vaginal tissues constantly on the stretch. So I tried without success many different instruments; the weight of the uterus being so great, that the moment the support was removed they were expelled from the vagina.

Among those used I will mention, Meigs' rings (smaller size), Thomas' modification of Cutter's, and Thomas' retroversion pessaries, the two last named being held in high esteem by Thomas for such cases. No instruments requiring external supports were tried, for the reason that she objected to their frequent introduction, particularly as she would have been compelled to apply them herself.

At last, determining to use my own mechanical skill, in an endeavour to contrive some device to suit the emergency, I introduced a Meigs' ring four inches in diameter, for the purpose of affording her temporary relief, or until I could find some pessary more likely to fulfil the indications, although, as I said above, it had of all other instruments the most objectionable features, viz., those of keeping the vagina in a constant state of distension, thus acting as a palliative and not curative, for while it sustained the prolapsed organ temporarily, it prevented the contraction of the vagina, thus rendering it incapable of returning to its normal state, and the performance of its important function.

After its introduction, so perfect and complete was its action in holding the womb in its proper position, and thereby affording the patient for the time such comfort, that she not only expressed her entire satisfaction at its success, after such repeated failures, but pertinaciously refused to have it removed, and I found it impossible to impress her with the fact of its incompleteness, although repeatedly warned of the ultimate result of such treatment; and although she was so frequently cautioned against the danger likely to result from its unceasing pressure upon, and distension of, the vaginal walls, she still resisted all my efforts to remove it.

She very soon after passed from my notice, and having nothing bearing upon the case to keep it in mind, it altogether escaped me.

Some six or eight months subsequently, being summoned, I found her in great pain, and upon inquiry found that she had been suffering for some time with all the symptoms of well-marked vaginitis. Upon an exploration, I found the vagina hot and inflamed, but the pessary nowhere to be discovered, but upon a more careful examination I found it imbedded as it were in the mucous membrane, completely enveloped by the mucous folds.

So relaxed was the mucous membrane when the ring was first introduced, that although it greatly distended the vaginal walls the rugæ were still left very distinct, and as a consequence of the constant and unceasing distension kept up by the instrument, and from increased loss of tone, they became relaxed to a still greater degree, until the projecting folds completely encircled the pessary, the opposing mucous surfaces thus being in immediate contact.

When from the constant pressure upon so vascular a tissue as the vaginal mucous membrane, irritation was succeeded by inflammation; adhesion between the opposing surfaces took place, thus encompassing the instrument in its whole extent in its meshes. Here was a double source of uneasiness, for I then felt that perhaps I had been guilty of malpractice in not forcing her to have it removed, and for allowing it to escape my mind, and then in the extremely engorged state of the mucous membrane I was fearful that in removing the pessary, troublesome hemorrhage might

follow the operation. But after some consideration I concluded to remove it at once, as delay could only breed danger, and as I had determined, for the purpose of causing as little hemorrhage as possible, that I would attempt to divide the folds at their points of union with my finger, or some non-cutting instrument. I had some difficulty in accomplishing the result, as I found the tissues very firm and unyielding, but the operation, although somewhat prolonged by this mode of procedure, was successful beyond expectation.

I first introduced Sims' speculum, and finding a point where the bond of union was the least complete, I made an opening with a sharp-pointed bistoury down upon the ring, sufficiently large to admit the introduction of a pair of long and delicate forceps, and with these I grasped the pessary, and with the index finger of the right hand forcibly divided the membrane, while at the same time by using gentle traction with the forceps, succeeded at length, after much pain to my patient, in removing the instrument, and much to my own satisfaction no considerable amount of hemorrhage followed.

She was then directed to remain as quiet as possible, in the recumbent posture, and in case of hemorrhage to use ice-cold injections, and if necessary the tampon, until I could see her again. The case progressed favourably, the inflammation and swelling speedily subsided, and the parts healed well, but slowly.

The result of this accident was, that, in healing, the mucous with the submucous tissues, at the points of laceration, so contracted that there remains *now* a cicatricial band or ring entirely encircling the vagina, said band performing fully the office of a pessary, and that so perfectly, that since the recovery of the patient (now nearly a year) she goes about as usual, and experiences no discomfort or inconvenience from a procident uterus.

There are of course two other factors to be considered in this case that are entitled to credit in its cure: first, the diminished weight of the womb, and second, the shortening of the uterine ligaments during the time the organ was supported by the ring, but they occupy altogether a subordinate position when considering the *completeness* of the result, thereby detracting nothing from the truly important function performed by this natural living pessary, this spontaneous elytrorrhaphy (if I may be permitted so to style it). It is conceded by all that the part performed by the vagina in sustaining the womb is the most important of all its supports, the others being auxiliaries.

I am aware that it may be said, and perhaps justly, that the cure is not yet complete, for it may not stand the test of time, but to that I can only answer that it has performed its part now for nearly a year, thus comparing favourably with the majority of true elytrorrhaphy operations, most of which up to this time have proved useless in less time than the one under consideration.

My apology for relating the history of this case must be twofold: first, on account of its novelty, and second, that I might offer it as a warning to others in the use of such instruments when not wholly within or under the control of the operator; for it is certain that all such cases will not end so propitiously for either patient or physician.

CENTREVILLE, January 16, 1875.

ART. XXI.—*Two Cases of Polypus; one of the Tongue, the other of the Uvula.* By SAMUEL C. BUSEY, M.D., one of the Physicians of the Children's Hospital, and Physician in Charge of Diseases of Children at the Columbia Hospital Dispensary, Washington, D. C. (With a wood-cut.)

CASE I.—(Notes by Dr. Bittinger, assistant) 1873, Oct. 2d, K. C., white, aged 13, presented herself at the Columbia Hospital Dispensary. On the under surface of the tongue, about midway of the raphé and springing from it, was an elongated polypoid looking growth, measuring one-half inch from base to apex. It had been first discovered six months previously, but had grown much faster during the two months immediately preceding this date. It was tender to the touch, very sensitive, and occasioned much annoyance. The edges of her teeth were perfectly smooth. The accompanying cut exhibits the growth very distinctly. (From a drawing by Mr. Grebel, medical student.)

On both sides of the raphé, extending backwards from the base of the polyp, were two rows of vesicles, each vesicle larger than a pin's head, and between the rows of vesicles on each side a small vein was distinctly seen. Removed the growth with scissors and cauterized the basal surface with a saturated solution of chromic acid. The bleeding was very slight.

The following description of its microscopic character is by Dr. E. M. Schaeffer.

Microscopical section 6118, Army Medical Museum, "polypus from tongue" This specimen presents a section of the small growth from which it was taken, cut at a right angle to its longer diameter, and is nearly circular in shape. It is tinted with carmine to demonstrate the nuclei of the cells, and mounted in Canada balsam.

On examination with a power of 100 diameters it presents the appearance of a papilloma of the mucous membrane, of which the main portion is formed by a hyperplasia of the connective tissue, differing in this respect from the mucoid polypi in which the principal mass is formed by hypertrophy of the gland elements.

The circumference of the section is formed by a thin wall of nearly normal epithelium of the kind peculiar to the oral cavity, flattened in its outer layers, roundish, and columnar in the innermost layers, where it is encroached upon by small papillæ, which present no hypertrophy, and do not run very far into the epithelial stratum. The area of tissue inclosed in this epithelial ring, constituting the remainder of the section, is composed of a stroma of connective tissue, infiltrated in every quarter by the small, round, nucleated cells, which, resulting from "proliferation" or "exudation" according as one or the other theory of their formation is adopted, are common to all actively growing connective tissue; as well that found under normal conditions as that undergoing inflammation in the immediate vicinity of cancerous growths.

These cells, sparsely scattered near the epithelial boundary, grouped in swarms in the interior of the section, especially in the neighbourhood of blood-

vessels, are also seen in some places actually penetrating the dense stratum of epithelium, as is not uncommonly seen in growths of this kind, as well as in epithelioma, etc.

The appearances thus far are quite compatible with simple hypertrophy, but there are seen near the centre of the section two small yellowish masses of cells, one of a somewhat regular oval outline, the other quite irregular in contour, and examining these with a power of 400 diameters, they are found to consist of nearly oval cells, flattened in one diameter, three or four times the diameter of the small cells pervading the tissue elsewhere.

They each contain a single nucleus, and resemble epithelial cells in appearance, strongly reminding one of the cells found in epithelioma, in parts when they have not yet by mutual pressure assumed the thin scaly character usual in the denser parts of the growth. In the absence of any definite concentric arrangement of these cells, or of any approach to the "cancer-cylinder" found in fully developed epithelioma, it is not possible to decide with certainty as to their true character and significance, but they are of interest in view of the observations of modern pathologists tending to prove a transition of the mucous papilloma into epithelioma. Rindfleisch also mentions the fact that the mucous membrane over a cancer developing in the submucosa has frequently been observed to be disposed to papillary proliferation.

This specimen differs from most others of the same character found in a similar locality in having a nearly unaltered epithelial covering, the hypertrophy not extending beyond the connective tissue, composing its greatest bulk.

The growth was quite vascular, as shown by numerous sections of small arteries and veins, principally near its centre.

1874, *January* 12. K. C. again presented herself at the Dispensary. She says she continued well until November, 1873, when the growth began to return, and has grown very rapidly during the past few weeks. It is now larger than when removed in October last. I again removed it with scissors, and cauterized the surface with a saturated solution of chromic acid.

19*th*. Surface entirely healed. The vesicles, before referred to, enlarged and projecting irregularly.

February 9. Polypus reappearing, now about the size of a pea; semi-translucent. Discharged its semi-fluid gelatinous contents and renewed the application of chromic acid. On the 16th she was again well, and nothing marked the locality of the former growth.

April 13. The growth has again returned; now globular and semi-translucent. Applied a silk ligature which, together with the growth, came away on the 15th, leaving a small superficial ulcer. Touched the ulcer with lunar caustic. On April 20th it had healed, but the cicatrix was distinct.

July 2. She again presented herself. The polyp was larger than at any previous time. Injected it with 15 minims of pure acetic acid. It turned black in 15 minutes, and sloughed off in 36 hours, leaving a slightly projecting base, very tender and vascular. On July 13th the surface had entirely healed, but still very slightly projecting, and on the 30th the point of attachment could only be recognized by a slight sensation of hardness, feeling somewhat like a very small shot under the epithelium. It has not recurred, and the vesicles along the border of the raphé have disappeared, January 14th, 1875.

A case, analogous in character, and frequently recurring, though the growth was "situated at the junction of the hard and soft palate, a little to the left of the median line," is reported by Dr. Méplain, of Moulins, in the *Bull. Gén. de Thérap.*, t. lxxxv. p. 347, and a synopsis of it is to be found

in the *Med. News and Library*, vol. xxxii. p. 155. Dr. M. failed with chromic acid, removed it with scissors, and applied perchloride of iron to the surface, next tore it away with dressing forceps, and a fourth time tried carbolic acid. It failing, he again removed the growth with scissors, and once more it returned in the course of a week. Finally, he injected it with one minim of acetic acid. It gradually wasted away and did not return.

I injected with an ordinary hypodermic syringe, on 2d of July, fifteen minims of the acid, having previously read the synopsis of Dr. M.'s case. There was but a momentary pang, and discoloration commenced.

CASE II. *Polypus of the Uvula*.—On the 29th of December, 1874, I removed from the posterior surface of the uvula a small polypoid growth. It was attached near the base of the uvula by a very small thread-like peduncle. The youth, 15 years of age, had been troubled with a slight cough for many months, perhaps a year, for which no satisfactory cause could be discovered. Having failed to discover the cause of the cough, which had resisted every remedial resource, I was inspecting, with unusual care, the pharynx, and, while doing so, directed the patient to expire through the mouth with force. This act brought to view what, I supposed at the time, was a transverse bifurcation of the uvula. Subsequently, I recognized the thread-like peduncle, which seemed to spring from the posterior surface near the base of the uvula. The growth always separated from the uvula towards the left side. It was removed without difficulty. The patient, with mouth widely opened, was directed to expire with force, when the body separated towards the left and for a moment caught and adhered to the half arch. With a pair of scissors the peduncle was clipped as near the base of the uvula as possible. But a drop of blood escaped.

1875, *February* 15. The cough ceased, and has not recurred.

ART. XXII.—*A New Method of Applying Medicines to the Uterine Canal and Cavity.* By E. P. SALE, M.D., of Aberdeen, Miss.

SOME time since, having broken a Clay's Insufflator with which I had been applying medicines in substance to the uterus, I desired to effect the same object with other means, and the mode suggested itself of doing so by using gelatine capsules as a vehicle for the medicine and allowing the capsule to dissolve in the uterine canal or cavity. The method has been quite satisfactory, not only in the instance alluded to, but in several others, and also in the hands of other physicians to whom the process has been mentioned.

As it requires some care in manipulation, I may as well describe the *modus operandi*, which is as follows, viz.: The patient being in the recumbent position, the speculum introduced, the uterine canal having been previously dilated (if it is not already morbidly so), and cleansed by wiping

it out with cotton-wool or by irrigation; the capsule to be used is introduced either below or above the *os internum* by means of small uterine forceps; the patient retains her position for half an hour for the capsule to dissolve, or, if circumstances prevent her being quiet, the uterine mouth can be plugged with cotton to retain the capsule, or for the same purpose a pledget of oiled cotton with a string attached can be stuffed high up in the vagina which can be removed by the patient by means of the string which has been left pendent.

The capsules used are the elongated No. 1 of Messrs. Plantin & Son. By this method nearly all medicines embraced in gynæcological therapeutics can be applied; such as *nit. silver, sulph. copper, sulph. zinc, pernit.* or *persulph. of iron, iodide of starch, chromic acid,* etc. All of these can be mitigated to suit the peculiar case by innocuous agents, as *nit. pot., pulv. acaciæ, pulv. glycerrhizæ, lycopodium,* and *starch.*

ART. XXIII.—*Albuminuria as a Symptom of the Epileptic Paroxysm.* By Wm. H. DeWitt, M.D., Assistant Physician to the Longview Asylum for the Insane, Hamilton County, Ohio.

BY a carefully conducted examination of the urine passed by some twenty odd patients suffering from epilepsy, I have detected in each specimen the presence of albumen. The quantity present in each instance was modified very much by the character of the attack. In those cases where the attack was severe and prolonged, the quantity of albumen present was quite large, amounting in some instances to an abundant deposit. In those cases where the attack was of a mild, transitory nature, the quantity present was exceedingly small; in no instance, however, was there an entire absence of albumen.

The quantity too was modified very much by the time intervening between the paroxysm and the act of passing the urine. The urine passed soon after a paroxysm contained a *much larger* proportion than that passed at a more remote period; traces, however, could be detected for hours after a paroxysm. The sp. gr. ranged from 1010 to 1022.

I desire to call particular attention to the fact that one specimen contained a small quantity of blood; its presence by close observation could be discerned with the naked eye; by the aid of the microscope its presence was readily distinguishable; it seemed to be intimately incorporated with the urine, and I have no doubt came from one or both kidneys. This appears to me to be of special interest, from the fact that the possibility of the presence of blood in the urine of epileptics, passed after a paroxysm, has been strenuously denied.

[These observations are confirmatory of those published by Max Huppert in Virchow's *Archiv.* See *Monthly Abstract of Med. Science,* Sept. 1874, page 108.]

REVIEWS.

ART. XXIV.—*Lehrbuch der Krankheiten der Weiblichen Sexual-Organe.* Von Dr. F. W. SCANZONI, Konichl. Bayr. Geheimen Rath und Professor der Medecin an der Universitat zu Wurzburg. Fünfte umgearbeitete Auflage. pp. 829. Wien, 1875.

Text-book of the Diseases of the Female Sexual Organs. By Dr. F. W. SCANZONI. Fifth improved edition. Vienna, 1875.

THE fact that a translation of this work has been made and published in this country, and is doubtless in the hands of many of our readers, may seem to obviate the necessity of anything more than a mere notice of its continuance. Yet medical science is advancing, and no department of it more rapidly than gynæcology. It is eighteen years since the first edition appeared, and as the duty then devolved upon us of introducing it to the profession here, a natural interest impels us to examine the present and note what changes it has undergone since then. That it has been increased in bulk by the addition of about two hundred and fifty pages, that its success at home is marked by reaching the fifth edition, these are matters of small moment. It is far more interesting and important to note what changes of doctrine there may be in its pages. At the time of its first appearance the author was in high repute and high position; the years since then have only added to his reputation, and he is now quoted as an authority in obstetrics and gynæcology wherever medical science is cultivated. His matured opinions upon some of the important and still unsettled points of practice in this department cannot, therefore, but prove of interest to students and practitioners everywhere.

There are two most excellent characteristics of a medical work well marked in this book. The first is that the author has very decided opinions of his own; the second, that these opinions have been formed from his own clinical observations and study. If the first leads, in some instances, to more prolixity than necessary, and if his replies to some of his critics render some few portions polemical in character, these blemishes are amply atoned for by the plain statement of his convictions and the firm basis upon which his doctrines rest. It is not maintained, of course, that his opinions and doctrines are necessarily correct, but there can be no mistake as to the honesty of such a writer, while his opportunities for observation have been ample. His experience has led him, as we shall see, to differ in regard to some very important points in gynæcological practice, and in our notice of the work we shall rather attempt to state his opinions than to criticize them, to give the results of his experience than to weigh the evidence for or against doctrines not in accord with authorities in our own language.

A perusal of the preface of the present edition shows us the author's opinion of extreme doctrines, his position as to various "schools" of gynæcology, and leads us to infer that such exist to a greater degree in Germany than here. He leaves no doubt as to his views even in the

opening paragraph, declaring that his introduction is not so much to state the appearance of a new and improved edition as to give his professional brethren to understand that "the highly praised so-called 'revolution' in gynæcological practice has not caused him to give up the original plan of his book and to re-cast it in accordance with the views of some modern prominent American and English gynæcologists."

"A gynæcological practice of almost thirty years," he continues, "has forced upon me the conviction that the device of the modern school: 'local disease, material explanation, and mechanical treatment,' as a general proposition, leads astray, since it produces skilful routinists, but not physicians, who, if their treatment is to be a successful one, must keep constantly in view the connection of the local disease with more or less distant physiological actions and pathological processes."

He appeals with confidence to those familiar with his former writings to bear witness that injustice has been done him when he is reproached with under-estimating the value of operative procedures in gynæcology.

"I know only too well that there are a not inconsiderable number of diseases of the female sexual organs which defy all medical treatment, and which offer only to the surgeon an advantageous field; I am also far from being afraid of the knife; but I challenge a practice which conducts operations without a foundation based upon anatomical, physiological, and pathologico-anatomical facts; operations which are partly useless, partly dispensable, and partly, finally, so circumstanced, that the gain of them is heavily over-weighted by the dangers attached to them."

"While I have always voluntarily recognized, as I now recognize, the true worth of the operative part of gynæcology, I oppose in the most strenuous manner, the extravagances which in modern times have sought to establish themselves, and which, alas! are only too well adapted to lead the young and less experienced physician astray, and force views upon him of whose dangerous tendencies he only first becomes conscious after he has learned, by more or less sorrowful experiences in his own practice, that not every doctrine which rejoices in a glittering raiment is really gold."

Passing to the body of the work, we cannot avoid quoting from the general observations upon the symptoms caused by uterine disease the following very positive testimony as to the necessity of a careful study of disease of the sexual organs of women on the part of the general practitioner. It is to be hoped that the necessity for such a quotation will not much longer exist, but that it does still we know from observation and from the statement of all writers upon the subject.

"The most varied alienations of the mental powers, the most surprising anæsthesia and hyperæsthesia of limited portions of the body, the most obstinate neuralgias, and numerous spasmodic and paralytic affections of certain groups of muscles have, if not always, yet by no means seldom, their sole origin in the presence of uterine disease, and can only be ameliorated or entirely cured by the curing of this."

In regard to the examination of patients, he still as formerly places the highest estimate upon the value of the touch, which is to be learned only by practice at the bedside, and does not hesitate to say that he who is not thoroughly versed in this procedure is not fitted for practice. He advises the touch *per rectum*, to correct or sustain the information derived from the other. In regard to the value of Simons' method of introducing the hand he does not commit himself, but does not seem favourably disposed toward it. As to the speculum, he regrets that its use is not more general among practitioners in his country. To use it, he places the patient on the back

with the pelvis elevated, and of the different kinds, prefers Fergusson's silvered glass instrument. In the first edition it was stated that it could not be obtained in Germany, except at a very high price; this objection is now removed, and, although he admits that cases do occur in which the polybladed instruments are better, the cases in which they afford greater advantages "belong to the rarities." Upon this point he is quite strong in his expressions, and bases his advice upon what he has learned from actual experience with such instruments as those of Charrière and Cusco. In regard to Sims' speculum, he considers its adaptation to general use and decides adversely to it, while commending it for certain cases and manifest advantages in some respects.

The author is no great friend to the uterine sound. His views have not changed in regard to the needlessness of resorting to this instrument upon every occasion, and the frequency with which serious mischief is occasioned by it. He has learned the advantages of, and adopted, the flexible instrument of silver or copper, and in this respect is in advance of some European gynæcologists.

He advises the use of sponge-tents for dilatation of the uterus, but bears testimony to the dangers which sometimes result from their use, for which reason he much preferred those of laminaria until, as he says, he learned from Sims a mode of using them which was free from danger. The value of metallic dilators, for non-puerperal cases, he does not estimate very highly.

The chapter upon general therapeutics opens with the admission of the necessity for local application, in the treatment of uterine diseases, with the expression of the fear, however, that we have gone too far in that direction, over-estimating their value and neglecting general measures. In local depletion, he decidedly prefers leeching the uterus, a process which he shows to be anything but of recent origin, and uses scarification only when the patient is decidedly anæmic, or when but a slight effect is desired. For caustic applications he uses nitrate of silver, solid or in solution, tincture of iodine, and sometimes the nitrate of mercury. He is averse to the employment of Vienna paste and caustic potash, and we find no mention of the use of fuming nitric acid either to the cervix or cavity of the uterus. He advises the actual cautery, but only for carcinomatous ulcers or such as have obstinately resisted other treatment, and still, as formerly, advises its secret employment, the patient being under chloroform, and not told of what is to be done, for fear of terrifying her. Melted sealing-wax is again recommended as an application to ulcers of the cervix. We have never heard of the author being followed in this particular practice.

For intra-uterine cauterization, he uses the nitrate of silver in a caustic holder, and we find no mention of by far the most convenient and safest means of application, that by Lente's coated probe. He is very favourable to the use of intra-uterine injections, and urges at some length their innocuousness, his principal arguments being his own experience, and a long series of experiments which he instituted, and by which he was convinced that fluids could not be forced into the abdominal cavity through the Fallopian tubes except by a force which would never be used on the living subject. He explains the occurrence of many of the attacks of peritonitis following this procedure, by extension to that membrane of an endometritis set up by the irritating fluid. Nevertheless he counsels dilatation of the cervix always that there may be free exit for the injected fluid.

"In no case in which this has been done, have we seen arise those violent pains which in former times, when we neglected this measure, came so frequently under our observation, that we made use of a therapeutical resource, with a certain dread and only in the most pressing cases, the great value of which, in the treatment of profuse long-continued uterine catarrh and certain kinds of hemorrhage, has always been recognized by us."

Various medicines in the form of unguents are advised, but for application to the vagina only. The special application of chloroform vapour is still highly recommended, especially for uterine colic, and an apparatus figured for its application.

The consideration of the use of vaginal injections occupies several pages. The temperature of the fluid used, and the force with which it is thrown in, are important elements in the use of this measure, warmth being one of the most important means to promote the liquefaction and absorption of plastic exudations, and those in the uterine parenchyma or around the organ rapidly disappear under the use of the hot douche. The local use of hot water as a means of allaying pelvic inflammations and promoting the absorption of pelvic exudations, has recently been announced as a new thing and a purely American discovery. Candor compels us to state that this doctrine is plainly taught here, just as it was in the first edition of the work. The effects of this remedy are said to be decidedly increased when the stream is thrown with considerable force, mechanical irritation supplementing the effect of temperature, an irritation which, on the other hand, should be avoided when cold injections are used for checking hemorrhage.

The author's views in regard to the pathology of that condition generally termed "chronic metritis," are probably well known. He is one of the prominent members of the "German school," which has led the way in promulgating correct views as to the real state of affairs in this affection. It is no longer an inflammation, or an hypertrophy, or an "engorgement," but an increase of the connective tissue of the organ, a "hyperplasia," and although he still heads the chapter "chronic parenchymatous inflammation," he teaches, as heretofore, that the term inflammation is a misnomer. He traces at some length the progress of the disease through the two stages, which are well marked, of infiltration and induration, and admits an increase of the muscular tissue of the organ, although not to the extent of the connective tissue.

"From all of which it results that the term chronic metritis does not really belong to all the cases to which it has been applied, that many, even perhaps most of the enlarged uteri characterized as inflammatory have nothing of an inflammatory nature in the correct sense of the word; they are changed conditions of nutrition, such as we see arise in other organs as the result of prolonged hyperæmia."

As the name indicates, the disease is essentially a chronic one, and its obstinate resistance to remedies is fully recognized by the author. When it is of long standing, a perfect cure, he says, is scarcely to be expected, and a perfect return to undisturbed health has not, in a single instance, fallen under his observation.

For the treatment of those cases in which the shorter duration of the disease, or the age of the patient, allows of hope for cure, and for the amelioration of all others, his principal remedies are local depletion and the application of warmth, while he lays stress upon the value of mild cathartics frequently repeated. He recommends the local application of iodine and

iodide of potassium, with glycerine to the cervix, but has no faith whatever in the value of the internal administration of these remedies, having never been able to discover any change in the affected organ after long continued use of them. He has not tried vesication of the cervix, and is not favourable to the use of either caustic potash, Vienna paste, or the actual cautery. In cases having more the character of passive congestion the astringents come into use. He has used, of late years, subcutaneous injections of ergot, and has seen excellent results from this remedy.

There is one point in connection with this form of disease of the uterus, which is of the utmost importance: it is the differential diagnosis between it and malignant disease. The author freely admits the impossibility of distinguishing the graver affection, in its early stages, from the more benign.

. . . "We will openly acknowledge that no perfectly reliable diagnostic sign is known to us. The age of the patient deserves consideration, the possibly to be discovered cause of the ailment, also its former course and its apparent influence upon the general organism. If, on some sides, the unusual hardness of the vaginal portion and the lower segment of the body is recognized as a tolerably reliable criterion of cancerous infiltration, we cannot assent to this view, because this condition has occurred to us in several cases in which the disease proved by its further course to be undoubtedly a simple induration. The size and form of the enlarged cervix, its smooth or uneven surface, the movability or immovability of the uterus, the kind and position of the pain, the character of the bloody and mucous discharges from the vagina—in short, all the various differential signs and symptoms of the older and later writers as to the benign or malignant character of enlargements of the uterus—have, in and of themselves, no high diagnostic value. They may, taken all together, and with careful consideration of all the peculiarities of the particular case, give foundation to a greater or less probability in one or the other direction, but long observation of the objective changes in the cervix can alone give full security."

Turning to the chapter upon cancer of the uterus, we find that the author enters very fully into the consideration of diagnosis, devoting about twelve pages to the subject, much of this space being occupied with a full commentary upon Becquerel's parallel tables of symptoms. We find here the same candid confession of inability to make a differential diagnosis between chronic areolar hyperplasia, and malignant disease. Indeed, in speaking of the mode of origin of the 108 cases which occurred under his observation, he says that "in 18 we treated a uterine affection, which we held to be nothing else than a chronic metritis, part with and part without ulceration."

"A reliable judgment as to the cancerous nature of a non-ulcerated enlargement of the neck of the uterus can only be rendered either by anatomical investigation, or, chemically, by long observation of the course and particularly of the beginning of the well-known metamorphoses of cancerous tumours." . . . "We openly confess that we have been very often tempted to believe enlargements and indurations of the cervix to be cancerous, yes, even that we have repeatedly declared such a diagnosis to the friends of the patient, without our opinion having found its indorsement in the further course of the disease."

"In the differential diagnosis of benign or malignant enlargement of the cervix, we lay great weight upon the condition of the mucous surface, whether it is intact or the seat of a more or less extensive papillary erosion or ulceration. Where this is lacking, be there present more or less of the above-mentioned symptoms given by Becquerel in favour of cancerous induration, we are always more inclined to look upon the enlargement as a simple hyperplasia."

Recently Spiegelberg has investigated the diagnosis of the early stage of carcinomatous disease, and has laid stress upon three points upon which to base a decision: 1. The much more considerable hardness and resistance of the cancerous deposit in comparison with the consistence of hyperplasia. 2. The immovability and close union of the mucous membrane covering a cancerous degeneration, which is not the case in hyperplastic enlargement and induration. 3. The fact that while the latter, under the pressure of a sponge-tent, dilates and becomes softer and more spongy, the carcinomatous cervix remains hard, unchanged in consistence, and undilated. Each of these points receives attention. The first two are declared unreliable from the author's personal observation and experience. In regard to the third, which not long since went the rounds of our medical journals, he says:—

"In regard to the effects of the sponge-tents upon the cervix indurated from malignant deposit, we have no personal experience, and it appears from Spiegelberg's interesting investigations that he had really only twice the opportunity of practically testing his theoretical view by a microscopical examination. The confirmation or refutation of the same must therefore be referred to the future. In the mean time we cannot avoid remarking that Spiegelberg himself confesses that by the action of the tent the destruction of the neoplasm, the ulceration of the cancer, is hastened, whereby, as is readily understood, great doubt is thrown on the reliability of this measure as a simple means of diagnosis; and as he also says that no injury is done thereby, because extirpation should immediately follow, it is certainly proper to ask whether, by this injurious effect of the tent, the results of the operation may not be affected."

While upon the subject of cancer of the uterus, we cannot avoid noticing one point in the etiology. The author expresses the conviction that venereal excess is one of the causes of this disease. Of the 108 cases observed by him, 15 had suffered, upon their own or their husband's testimony, from a sexual desire beyond possibility of satisfaction. That prostitutes comparatively seldom suffer from the disease (there were only three among his cases), he explains by saying that, with them, coition is not generally accompanied by much feeling, and it is not frequent intercourse alone which causes the disease, but extraordinary excitement and sexual pleasure. To this view we are not prepared to assent. We would not for a moment think of placing our experience against his, and our opinion may be of little value, but from several cases which have fallen under our observation, in which unusual sexual appetite has been prominent, we have been led to place this in the symptomatology, rather than the etiology of the disease; in other words, we think the abnormal sexual desire a result of the pathological process rather than the cause of it. Our opinion is based upon the fact that the unusual sexual appetite appeared but a comparatively short time previous to the presence of the disease being ascertained, and had not been a characteristic of the earlier periods of life.

In the chapter on dysmenorrhœa we find considerable space devoted to the consideration of division of the cervix, an operation to which he is not at all partial, as may be supposed from the tenor of his preface. He animadverts on the frequency with which Sims resorts to it, and also expresses doubts of it being ever necessary.

"To the honour of German science we can say that such kind of extravagances do not find so easy an adoption here as in England and America, where, besides, some of the most renowned surgeons and gynæcologists have arrayed themselves in opposition to a procedure to which, in some rare cases,

a certain justification cannot be denied; but the abuse of which marks rather a retrograde movement than an advance of our department."

In the first edition of this work the subject of inflammation of the structures in the neighbourhood of the uterus was disposed of within two pages; now it occupies twenty-four, a space more in accordance with the great practical importance of the subject, and the change serving somewhat to mark the advance made in this direction. The author treats of pelvic cellulitis, pelvic peritonitis, and pelvic abscess in a single chapter, and without subdivisions. He declares it impossible to distinguish, in the early stages, a metritis or an oophoritis from an inflammation of the membrane surrounding the organs, but points out how the membranous may generally be distinguished from the cellular affection, laying great stress upon the time at which the exudation is to be discovered after the attack begins; if a tumour is to be felt in from twelve to twenty-four hours, the disease is phlegmonous in character. He expresses the conviction that these peritoneal and cellular inflammations are always secondary affections, depending upon some previously existing disease of the uterus, ovaries, or tubes, herein agreeing with Matthews Duncan, although he does not mention that author's name. He alludes to the far greater frequency of the exudations upon the left side, but without giving any statistics, and explains the fact by their puerperal origin, the greater frequency of the first position of the child, and consequent greater injury to the tissues on the left side of the pelvis. He calls especial attention to the frequent occurrence of a latent form of the disease—the true explanation of an unsatisfactory convalescence from labour—being only found weeks after the event by a physical exploration. And in the symptomatology of the disease the following is well worthy of remembrance:—

"It appears to us also deserving of mention, that the exudation, pressing upon the nerves passing through the cavity of the pelvis, not rarely causes disturbance of motor power, contractions, and paretic and paralytic symptoms in the lower extremities, the cause of which is not seldom sought for in altogether other directions, and, of course, cannot be recognized so long as a careful internal examination of the pelvic organs is omitted from the investigation."

He calls attention to liability of deception as to the point of opening of a pelvic abscess in the vagina, the examiner feeling certain that it will break out at a given point, when the pus all at once appears elsewhere.

"This apparent fluctuation perceived through the vaginal wall owes its origin not to the superficial location of the purulent collection, but to a serous saturation, an inflammatory œdema, of the vaginal wall and of the neighbouring capsular layer of the exudation, which gives to the finger an obscure sensation of fluctuation."

The author, except in special cases, allows the natural opening of pelvic abscesses.

The extremely chronic cause of some of the cases is described, and the importance of a knowledge of the fact to the physician duly impressed; he who is fully aware of it will stay his hand as to any operative interference with the pelvic organs so long as a trace of the affection remains, be it years after its origin, and guard his tongue as to prognosis, for the patient is always liable to a relapse which may have even a fatal termination. In those cases in which for a long time there had been no change, nothing apparently being left but hard tumour of connective tissue resulting from the exudation and producing symptoms only mechanically by

pressure on and dislocations of neighbouring organs, we have no guarantee of continued quiet.

"For, finally, it is not to be forgotten, that these apparently wholly solid tumours, not so very seldom have encapsulated within them larger or smaller collections of pus, whence it may happen that the contents of the tumour, after perhaps years of quietude, breaks a way out and so brings on all the dangers of a pelvic abscess."

Looking carefully through the section devoted to fibroids of the uterus, we find nothing worthy of especial notice. The author bears strong testimony to the value of Hildebrant's hypodermic injection of ergot as a measure of treatment. When it comes to the operative treatment of these growths, a field in which of late so many brilliant advances have been made and especially in our own country, his conservative tendencies are so strongly expressed that we cannot forbear quoting, if only to show the contrast between his doctrines and those current with us. First as to the removal of these tumours by abdominal section. He credits Kœberle with resuscitating this "long-forgotten operation," and gives his results as five operations with three deaths; he then gives statistics as collected by Kœberle, 42 such operations with eight cures and 34 deaths, and mentions no other name in connection with the operation; and then says:—

"We, for our part, see in such foolhardy interferences no advance of surgery, and cherish the hope that the example of the French and English schools in this respect will never find imitators upon German soil."

Next, as to the extirpation of these tumours by the vagina, he says:—

"It appears only to be justified in the rarest cases; according to our opinion only when the growth is attached to the neck of the uterus, and projects freely into the vagina. We would not readily undertake the removal of submucous fibro-myomata projecting within the cavity of the uterus, as has been proposed by Amussat, Kiwisch, Hutchinson, Routh, Baker Brown, and others, although it was once done at our gynæcological clinic by Dr. Schmidt with surprisingly good results, because we hold this operation to be not only extremely venturesome and dangerous, but because also we are acquainted with no means whereby we may learn beforehand the possibility of completing the undertaking."

It is not at all improbable that a future edition of the work may change all this, for, turning now to the subject of ovariotomy, we find the greatest possible change of opinion in regard to the operation from that expressed in the first edition.

"We hold the extirpation of ovarian tumours to be a surgical adventure, which, when it succeeds, must be thankfully glorified by the patient, and gaped at by the public."

These are the terms used in regard to ovariotomy only eighteen years ago! The author quotes this now and makes the *amende honourable;* the testimony of thoroughly reliable men, and the brilliant results obtained, have transformed him from a condemner to a defender of the operation. For the slow advance of ovariotomy in Germany, he pleads the influence of Simon's statistics, published in 1860, of all the operations performed up to that time, viz., 64, of which only 12 were really cured. He further pleads that an evil influence was exerted by the failures of rash, inexperienced, and unskilful men, who, deceived by the apparent ease of the operation in simple cases, attempted an undertaking which requires the highest qualities on the part of the operator, and that a portion of the ill-success arose from want of due attention, both to the various steps of the opera-

tion and to the after-treatment, which, on the part of German surgeons, were "in part unknown and in part neglected."

So far as ovariotomy itself is concerned there is little here to detain us. The author follows Kœberle closely as to the details, and is very brief, referring his readers for further particulars to the works of that author and to those of Spencer Wells and Baker Brown, acknowledging that he has not space for a subject the literature of which has so increased within ten years that it would alone fill a small library.

We looked with interest to the diagnosis of ovarian tumours upon microscopical evidence, hoping to find some testimony as to the presence or absence of an ovarian cell pathognomonic of the disease. The author follows Waldeyer closely in this branch of the subject, lays great stress upon the presence of paralbumin in the fluid, and as to cells looks upon those of cylindrical epithelial character as diagnostic, but gives no particular kind of cell as of importance.

Puncture of ovarian cysts through the vagina is well known to be a favourite operation of the author. In the present edition he has not modified his views as to the procedure, still thinking it the most preferable plan of procedure, both as to danger and as to probability of cure, but admits that the cases to which it is adapted are comparatively few. He still uses the same instruments and directs the same mode of operating as formerly. His statistics are as follows:—

"We have performed paracentesis through the roof of the vagina 23 times, and consider 14 of the cases to be entirely cured; in 5 refilling of the sac took place within a few weeks, 3 withdrew from our observation, and 1 died of typhus two months after the operation, and as no autopsy was permitted we can form no opinion as to the success in this case."

Limited as is the number of subjects we have touched upon, it is sufficient to afford an opportunity to judge of the author's style and the general tenor of his opinions upon some of the most important subjects connected with gynæcology.

To the firmness of his convictions, to his undoubted honesty, and to the clinical basis upon which his opinions are founded, we have already alluded. Looking at the work as a whole, to its methodical arrangement, to its completeness as to the various branches of the subject, we find it excellent. Still, we cannot fail to note omissions which are not only numerous and important, but, for a writer occupying his position, surprising. Thus, with a general bibliography at the beginning of the volume, and a special one at the head of each chapter, we have no notice of so important a treatise as Raciborski's on menstruation, or of Matthews Duncan's on pelvic inflammations, or Atlee's on ovariotomy. There is no mention of what has been done in removing fibroid tumours of the uterus by Pean, or by Sims and others of this country, nor of the brilliant results obtained here in the reduction of long-standing cases of inverted uterus. Nothing is said of the diagnosis of simple cysts of the broad ligaments by physical examination of their contents, nor of the spontaneous coagulability of the fluid of fibro-cystic tumour of the uterus, a fact which is the more remarkable since his countryman, Spiegelberg, has called particular attention to it.[1] Far more important still, we have not succeeded in finding any notice of the aspirator, one of the most useful recent additions to our means of

[1] See Monthly Abstract of Medical Science, Jan. 1875; from Archiv für Gynæc.: vi. 3. 74.

diagnosis, if not of treatment. Finally, our examination of this work leads us to the same conclusion reached from a late personal visit to some of the chief celebrities of Europe, both men and institutions, that in all that relates to gynæcology and its practice, our own country will bear comparison with any other, either as to the extent to which the subject is cultivated by the profession generally, the text-books and treatises it has produced, or the substantial advances it has made in the subject.

J. C. R.

ART. XXV.—*Studies in the Facial Region.* By HARRISON ALLEN, M.D., Professor of Anatomy and Surgery in the Philadelphia Dental College. Illustrated with fifty-six wood-cuts. (Reprinted from "The Dental Cosmos.") 8vo. pp. 117. Philadelphia: J. B. Lippincott & Co., 1875.

A NEW work on regional anatomy in our own language is both rare and welcome, even though, as in the *Studies in the Facial Region*, only a limited portion of the body is brought under consideration. The lectures that form the basis of the work under review were delivered to dental students, yet its author has not confined himself to the parts with which alone practitioners of dentistry are supposed to deal, but has taken up all the regions of the face, viz., "*the region of expression, of the temple and angle of the lower jaw, of the ear, the upper and lower jaws, the nose, the mouth, the tongue, the naso-pharynx and palate, the spheno-maxillary and supra-hyoid spaces.*" Each subdivision is made according to "relation of function," applying the physiological law that "areas supplied by branches of the same nerve are co-associated in function."

The anatomy of these various districts is given thoroughly and minutely (perhaps at times too minutely for the benefit of the majority of medical students). Some few changes in the nomenclature ordinarily employed have been made. Praying "that the time may soon come when we can sweep away such pedantic rubbish from anatomy," Dr. Allen would discard the old names *levator labii superioris* and *levator labii superioris alæque nasi*, and substitute Henle's name for the two, *quadratus labii superioris*, holding that "no conscientious teacher can permit himself to employ two names where one does as good service." This is certainly true enough, and it is equally true that the anatomical nomenclature is full of "pedantic rubbish;" but which name conveys to a student's mind the best and clearest idea of location and office, "*square muscle of the upper lip*" or "*elevator of the upper lip*" and "*of the upper lip and ala of the nose.*" In this instance, "we like what he says, but prefer the old way." The region between the masseter and depressor anguli oris our author denominates *porta*, to which the only objection is that it adds one more to the multitude of names that the student must fix in mind. Instead of *posterior naris*, preference is declared for the term *choana* "to express the parts as seen in the living subject" To the "orifice of communication between the vestibules and the true oral chamber, the very appropriate name of "*præ-coronoid space*" is given. The term *fauces* is nowhere used, it being held that nothing but confusion can arise from the use of a term

such as this, and it is better in consequence to avoid it." In treating of sublingual cystic tumours it is said that "Weber definitely proved that the chief locality is . . . . the synovial sac described by Fleishman" (Fleischmann). There certainly are grave doubts in the minds of many of the best anatomists whether any such bursa as that described by Fleischmann is normally to be found.

The sections devoted to the surgical anatomy of and localization of disease in the various subregions of the face are full of interest, and will, we are sure, prove to the majority of readers the most acceptable part of the work. In the paragraphs upon the "region of expression," not a little space is devoted to the wrinkles and their causes, the student being advised to "make a study of faces, searching for meanings among their folds and expressions, and, by studying the wrinkles of others, gain a useful 'wrinkle' here and there for himself." The description of the anatomy of the facial veins is followed by "a view of the subject from a clinical aspect," it being shown that facial phlebitis progresses *upward*, except when originating in the lower lip, "when, as a rule, it is downward." The succeeding paragraph is very properly on facial carbuncle, "the most fertile cause of phlebitis." We have already noticed that the name *porta* is proposed for the region through which the facial artery and vein cross the inferior maxilla; attention is called to the fact that an incision upwards and inwards 1½ inch long, exposing this *porta*, will, "without wounding a single vessel and dividing no part of importance (save the filaments of the facial nerve crossing), afford an easy access to many remote points of the side of the face."

We are somewhat surprised to see it stated that "Bumstead asserts that the soft sore is here unknown." "Rarely, if ever, met with," was that author's opinion as expressed in the first edition of his work, but in the last edition he clearly admits that cases have been seen. If further evidence of the occurrence of "cephalic chancroidal ulceration" be necessary, it is furnished in the paper by Dr. R. W. Taylor, published in Brown-Séquard's *Archives*, No. 5, May, 1873.

The references made to the relations of the transverse process of the atlas to the parotid region will doubtless attract to this process the attention of many who have not particularly regarded it; not more attention, however, than it deserves, if, as Dr. Bigelow believes, "cystic tumours of the neck *almost always* arise from the parts about this process and the styloid process of the temporal bone."

In the sections on the jaws the practical importance of several points treated of will be at once perceived by every reader. Among these are: 1. The fact that both anatomically and clinically the alveolus belongs rather to the teeth than the bone, and, as a consequence, its diseases should be considered as "dental in their significance;" 2. That while the inferior maxilla has certain points of resemblance to the long bones, it has more of difference, which seem to explain its liability to necrosis, and the recognition of which will enable the practitioner to early diagnosticate the osteitis that precedes the death of the part; 3. The existence of premaxillary bones, which may not only fail of normal union with the superior maxillæ, but may, as shown by an interesting case narrated, be lost in consequence of disease; 4. The modification of the "normal and abnormal nutrition of the bones" from their association with a mucous membrane, as results of which "the majority of the errors of nutrition of the upper jaw are of mucous origin," and most fractures of the lower

jaw are compound. What has been written on the third point (the original development by an intermaxillary bone) would, we think, have been made more complete and of more service to others than dental students, had something been added upon hare-lip and cleft-palate.

One of the best sections on the "localization of diseased action" is that upon "the lower jaw as determining the localization of tumours;" the which "from an anatomical standard resolves itself into a few simple propositions: 1. When a tumour originates within or beneath the gum, and involves the cancelli secondarily, it indubitably belongs to the alveolar group of morbid growths. 2. Fibrous tumours. . . . . may either arise within the body of the bone, when by their growth they will encompass the bone, or taking their origin beneath the periosteum they protrude toward the affected side. 3. The lower jaw being in the line of growth of epithelial tumours of the lower lip, secondary cancers from that source are not infrequently seen." In treating of the nose and its diseases the usual denial is made of the originating of nasal polypus from the septal wall. That this, however true as a rule, is not a rule without exception, we know from personal observation.

The surgical value of a remembrance of the anatomical structure of the præ-coronoid space in the mouth is shown in the ready development of submucous infiltration in this region, to which attention is directed, and the rapid extension of inflammation from the mucous membrane here to that of the soft palate and the tonsillar space.

Eight pages are devoted to the localization of diseased action in the tongue, and these pages are among the most interesting in the book. What is said upon atrophy of this organ, which, "without pressure or lesion of the trunk of the hypoglossal nerve, is rare," recalls to mind a very marked case of congenital atrophy of the left half of the organ, chiefly affecting its anterior two-thirds, which came under our notice in the person of a medical student.

The surgical anatomy of the pharynx, spheno-maxillary and supra-hyoid spaces is duly treated of. Deafness, consequent upon chronic inflammation of the oro-pharynx, is referred to, and it is well for every one to remember that "it is not the fact of engorgement so much as the direction of the extension of the tonsillar mass that may prove mischievous." It is to be regretted that a word had not been added to what has been said respecting post-pharyngeal abscess, calling the reader's attention to its not so very infrequent occurrence in infants, both because of the fact itself, and still more because an incorrect diagnosis is so often made in such cases.

The work closes with the consideration of the *nomenclature of the teeth and the arrangement of the cusps of the teeth*, of decidedly more interest to pure anatomists and dentists than to medical readers in general. It is this part of the book, however, which is the more especially claimed to be an original contribution, and as such all credit should be given.

In conclusion, it only remains to add that the *Studies in the Facial Region* is a gladly welcomed and positive contribution to our medical literature, well worthy of the careful attention of all. The only regret we have is, that, since what has been written is so good, more had not been given, intended for the benefit of medical students and practitioners rather than the limited class qualifying themselves for the duties of "oral surgeons."

P. S. C.

ART. XXVI.—*Erysipelas and Child-bed Fever.* By THOMAS C. MINOR, M D. 8vo. pp. 131. Cincinnati: Robert Clarke & Co., 1874.

THE design of the author will be seen in the following quotation:—

"An inquiry into the connections said to exist between child-bed fever and erysipelas; also a short account of both diseases as they prevailed sporadically in the United States during the census year 1870, and an appendix containing the history of a puerperal fever epidemic observed in southwestern Ohio, in the winter of 1872." (p. 5.)

His special attention was directed to this subject, by the difference of opinion manifested in the Cincinnati Academy of Medicine, during a discussion on the question: Should a physician attend a case of labour, who has recently been in attendance upon patients suffering from erysipelas?

Contagion.—After some remarks upon the history of puerperal fever and its epidemics, and upon the epidemics of erysipelas which were more or less coincidental with the former, the author takes up the old battle subject of *contagion*, a question which ought to have been set at rest long ago, but which we presume must, from the character of the human mind, always have its advocates and opponents, although it has to be admitted that those who believe in its potent influence can present an array of historical facts not at all easy to overbalance or controvert.

The question of the instrumentality of physicians and nurses in conveying a mysterious miasm, capable of inducing peritoneal inflammation in parturient women, was at one time a very active one in this city, and gave rise to the publication in this Journal, and several medical works, of numerous valuable papers, which collectively afford an exceedingly important, if not almost exhaustive record. The moving spirit in this discussion originated with the late Dr. David Rutter, who was so unfortunate as to meet with 95 cases of puerperal fever in his own private practice, with 18 deaths, in a period of four years and nine months (1841–1846), and at a time when there were very few cases in the hands of other physicians. The visitations of the disease at the Pennsylvania Hospital on several occasions, and at the Philadelphia Hospital, added to the general interest in the subject. As Dr. Minor makes no reference to any of the testimony published in this Journal in proof of contagion in this disease, and its intimate connection with erysipelas, we shall be excusable for enumerating some of the more important, viz.:—

1. Discussion at the College of Physicians, of Philadelphia, reported in the October number, for 1842, pages 410–418.

2. Puerperal fever cases reported by Dr. Robert Storrs, of Doncaster, England, showing the propagation of the disease at his hands, from a case of gangrenous erysipelas, followed by repeated abscesses requiring the lancet (Jan. 1843, page 224).

3. Notice of a malignant epidemic which prevailed in the lying-in department of the Philadelphia Hospital, in March and April, 1842 (*Ibid.*, page 244, op. cit.). Out of nine children whose mothers had puerperal fever, five died of peritonitis in about a week after birth.

4. Contagiousness of puerperal fever, by Dr. Oliver W. Holmes (July, 1843, page 260). . . . This paper contains quite an array of cases bearing upon the connection between the contagion of erysipelas and puerperal fever, and their power of interchange.

5. Drs. Hall and Dexter's account of the erysipelatous fever of Vermont

and New Hampshire (Jan. 1844, page 13). . . . This is an interesting and valuable paper, showing the remarkable pathological connections which exist between some of the types of epidemic erysipelas, and puerperal fever.

"The most fatal results, for the most part, were to be anticipated in the affection of the internal organs, particularly the bowels and uterus, and during the season when the epidemic might be said to be at its height, not one in seven escaped, who had disease of the last-mentioned organ." (p. 191.)

Those who are only familiar with erysipelas as a cutaneous malady, can form but a very imperfect estimate of that terrible type which is so allied to peritonitis as we find it after parturition, that some pathologists have been inclined to term the latter, "malignant internal erysipelas." (p. 19). Erysipelas in fact will attack skin, connective tissue, inter-muscular laminæ, the mucous membranes, serous cavities, and many important viscera, such as the uterus, liver, intestines, etc.

"In the county of Caledonia, Vermont, thirty cases of puerperal peritonitis occurred, only one of which recovered. And in Bath, N. H., containing a population of 1500 to 1600, twenty mothers died from puerperal peritonitis, and about forty with erysipelas." (p. 21.)

In 1843, the cases in Dr. Rutter's practice amounted to 45; whilst at the same time Dr. William Klapp, who lived and practised in the same section of Philadelphia, several times having labour cases in the same row, did not meet with one instance of the disease in two hundred parturient women, as he himself informed the reviewer. As there were no evidences of the disease being properly an epidemic, either from its relative fatality or general distribution among obstetricians, the misfortunes of Dr. Rutter excited a great deal of interest, and contagionists and their opponents warmly discussed the questions involved. Those interested in the matter are referred to the number of this Journal for Oct. 1842, page 412; Charles D. Meigs, on *Diseases of Women*, page 590; and Churchill, on *Diseases of Women*, edited by Condie, page 618.

Dr. Rutter, to rid himself of the mysterious influence which appeared to attend upon his practice, left the city for ten days, and before waiting upon the next parturient case, had his hair shaved off, and put on a wig; took a hot-bath, and changed every article of his apparel, taking nothing with him that he had worn or carried, to his knowledge, on any former occasion: and mark the result. The lady notwithstanding that she had an easy parturition, was seized the next day with child-bed fever, and died on the eleventh day after the birth of her child. Two years later, he made another attempt at self-purification, and the next case attended fell a victim to the same disease.

Dr. Condie says (op. cit.):—

"But he was charged with being a carrier of contagion. How could he carry the cause? What was the cause? Was it some ozone that stuck to his hands or coat?"

Dr. C. D. Meigs remarks (op. cit.):—

"*Does the doctor generate and distil the poison, or merely transfer it?* If he transfers, why don't I also diffuse it? We are equally men, equally clothed. No, gentlemen, you do not carry the poison; you are merely unhappy in meeting with such accidents through God's providence."

Now suppose we should state, as we do upon the authority of an obstetrical contemporary of Dr. Rutter, that, at the period referred to, he

was the subject of an obstinate muco-purulent coryza, would not that give a reasonable solution of the mystery? Was his pocket-handkerchief not capable of conveying septic poison through his hands to the patient? Some would say no. But what says M. Chaufford, of Paris, as quoted in the last number of this Journal, page 287. *Every suppuration, every disease which produces morbid discharges, if in the vicinity of women in child-bed, will give rise in the latter to puerperal fever;* and he says he has particularly noted the effects of abscess, purulent ophthalmia of infants, and erysipelas. The very successful and distinguished ovariotomist Mr. Spencer Wells, is in the habit of exacting a written and signed statement from each visitor to his operations, to the effect, that he has not been in attendance upon any case of zymotic disease. Ask Dr. Goodell, why he has not had a visitation of the fever among his cases at the Preston Retreat. He recognizes the danger that lies in infection and contagion, and acts accordingly, using every precaution to prevent the possibility of septic or other poisoning, manual or local.

Dr. C. D. Meigs states, page 591:—

"Seeing that I could never convict myself of being the means of spreading the contagion, I remain incredulous as to the contagiousness of the malady."

It may be entirely coincidental, but we well remember a case which a brother physician put an entirely different construction upon. An eminent obstetrician stated to the writer, that Dr. M. was called in an emergency to deliver a patient of his, after he had left her a short time, the labour having been unexpectedly hastened in his absence. When he found what had been done, he remarked to his wife on reaching home, that he feared for the lady, and anticipated trouble for himself, because Dr. M. had been called from an opposite dwelling, where he was in attendance upon a case of puerperal fever. We do not say that Dr. M. took the disease to her; but she was shortly seized with it, and made a narrow escape for her life. A celebrated obstetrician who placed no credence in contagion in any disease, once said to the reviewer, upon discovering that one of his patients (and he had had a number of cases) had puerperal fever, "Well, Doctor, this is always my unfortunate luck." We accounted for this case, from the fact that his assistant in the labour had been dressing patients under surgical treatment; no doubt a fruitful source of the disease in the lying-in wards of many a general hospital.

Dr. James Blundell, in his *Principles and Practice of Obstetric Medicine*, page 551, remarks:—

"Remember that the facts affirmative of contagion are so strong, that on this affirmation it becomes our duty to act."

In the records of puerperal fever we shall find many instances, where the disease has appeared in cases of sudden emergency, when the attendant has not had time to, or has failed to make the proper precautionary ablutions and changes necessary to prevent risk to his patient.

Seventy pages of the work of Dr. Minor are taken up with a critical examination of the census reports of our States and Territories for the year 1870, touching the mortality from puerperal fever and erysipelas; the geographical position, altitude, temperature, and rain-fall being given in each case. From this investigation it will appear that there was no epidemic of either malady at any point that year; that the two generally kept pace more or less with each other; that they were much less frequent among the white race than the black; and that they were most often met

with in the spring months. The whole mortality amounted to 3162 from erysipelas, and 1828 from puerperal fever, in a population of nearly 39,000,000; and the largest proportion of deaths from each malady was in the month of March, which is memorable for its damp, cold winds.

In 1872 and 1873, puerperal fever and erysipelas prevailed as an epidemic in Cincinnati, Ohio, the deaths being 122 of the former, and 68 of the latter, against an annual average for the previous five years, of 13⅜ and 13½ respectively. The history of this epidemic gives some curious evidences of the interchangeable character of the two diseases.

"Dr. A. loses a patient from puerperal fever on the —— of July; duration of illness, 8 days. Six days afterward another 'death certificate,' puerperal fever; duration of illness, 8 days. On August, 'death certificate,' from erysipelas. Four days afterwards, 'death certificate,' from puerperal fever; duration of illness, 6 days." Several other instances of the same character are quoted, with regard to other physicians." (p. 116.)

"It is a sad commentary on this last epidemic, that a few men, who attended cases of erysipelas and puerperal fever promiscuously, should have been most unfortunate in their practice. On the contrary, we notice some physicians, having a large practice, who lost not more than one or two cases of puerperal fever, and no erysipelas cases at all. I think the majority of our physicians refuse to attend confinement cases, when they have erysipelas or puerperal fever cases on their hands." (p. 117.)

Dr. Minor sums up the results of his investigations as follows:—

1. "Erysipelas and puerperal fever seem to prevail together throughout all the States.
2. "Any marked increase in any locality of one disease, seems to be accompanied by a corresponding increase of the other.
3. "Where histories of past epidemics of either disease are obtainable from any of the States, the seeming connection of the two diseases was noticed by physicians at the time of such epidemics, and remarked on.
4. "For these reasons we are, I think, justified in concluding that there is an intimate connection existing between puerperal fever and erysipelas." (p. 119.)

From a study of the Cincinnati epidemic, he makes the following deductions:—

"Where an isolated death from puerperal fever was noted, outside of the infected districts, a corresponding death from erysipelas was noted in the same locality. This was almost invariably the case.

"Infants die of erysipelas shortly after or before their mothers die of puerperal fever.

"A few physicians, attending puerperal fever cases and erysipelas cases at the same time, as exhibited by the death register, were most unfortunate in their practice.

"Physicians having large obstetrical practices, who are known to believe in the doctrine enunciated regarding the connection of puerperal fever and erysipelas, make an exhibit of but few death-certificates from either cause." (p. 120.)

The following statement of Dr. Minor is of considerable interest and importance:—

"An epidemic of scarlet fever is at this date (June, 1874) prevailing in this city, although now happily on the decline. This epidemic commenced in May, 1873, after the subsidence of the puerperal fever epidemic. No month was exempt from scarlet fever, although there were only 15 deaths from the disease during the first four months of the year. Only one of these occurred in April. After that, the deaths from scarlet fever increased each month, until there were from it 113 deaths in November, and 108 in December. The total deaths from this cause were 410." (p. 126.)

Dr. Braxton Hicks remarked before the London Obstetrical Society (*Trans.*, vol. xii., 1870):—

"There is no doubt that scarlet fever and erysipelas have much affinity; indeed some have suspected them to be but a slight modification of the same poison, apparently interchangeable."

But what says the Health Report of Cincinnati. . . In 1874 (up to June 1st) puerperal fever did not prevail; less than the usual number of cases being reported; and the same is said of erysipelas. From May, 1873, to June, 1874, there were about 800 deaths from scarlet fever; and the number of cases was computed at from 6000 to 8000.

If epidemic puerperal peritonitis is due to the same peculiar poison which produces erysipelas, the peritoneal variety of which closely resembles it; then it must result from a combination of certain conditions and circumstances in and around the patient. Traumatic disturbance, acting upon a system peculiarly susceptible of erysipelas, will readily produce it, if the state of the atmosphere, the physical health of the subject, and his hygienic relations are favourable to its approach. We had one female patient who had several attacks of erysipelas in her left arm, but never in any other region; and by far the most severe one was excited by the prick of a needle in the index finger. Another subject, a boy of 17, with a penetrating wound of the thigh, had seven attacks of erysipelas at short intervals, due apparently to attempts made by stimulating dressings to cause the wound through the skin to granulate and heal over; for under a very simple application there was no renewal of the inflammation, and the parts cicatrized.

There are seasons when, in a hospital, not only the slightest wounds become erysipelatous, but the disease will attack, as we have seen, cases under simple mechanical treatment, in the most severe and fatal form; such, for example, as a leg undergoing straightening of the knee by a screw-splint, for partial anchylosis, etc. . . Let a parturient woman have induced in her the same susceptibility, and her utero-placental laceration, like an amputated limb, will offer all the traumatism requisite as a starting-point for a fatal puerperal peritonitis. Increase this danger by an exposure to the infection of this disease, or erysipelas, and she may have the former without any special susceptibility other than the parturient state often produces. Expose her again to atmospheric or manual contamination from septic poison in the form of purulent discharges, or the taint of the autopsy, and you have puerperal septicæmia or phlebitis. It matters little, except for scientific interest, whether epidemic child-bed fever is a disease of multiform character, or whether its varieties are determined by the manner of its production, for all have more or less a fatal tendency under the most approved treatment; but it concerns us to determine how to protect the patient by precautionary and prophylactic measures. R. P. H.

ANALYTICAL AND BIBLIOGRAPHICAL NOTICES.

ART. XXVII.—*Medico-Chirurgical Transactions.* Published by the Royal Medical and Chirurgical Society of London. Volume the Fifty-seventh. 8vo. pp. lxiii., 298. London: Longmans, Green, Reader, and Dyer, 1874.

BY frequent intercourse with books most men insensibly acquire the habit of regarding them in the light of personal acquaintances, and more especially is this the case when, as an annual volume, the old friend crosses the path at stated intervals, ever in the same shape, but with new contents, and with varying thoughts, feelings, and views. The individual minds which have made the reputation of this most aristocratic of medical publications, and which still contribute to enable it to maintain its pre-eminence, have been and are among the masters in our profession, as representatives of British medicine, and as we take up the book we feel that its inspection will amply repay whatever labour it may cost. It not being our intention, however, to indulge in reflections upon the past and the position these *Transactions* occupy as a whole, we will proceed at once to analyze in two groups, surgical and medical, the different articles in this volume. The surgical papers are numerous and of interest. Some of them, however, having been noticed in former pages of this Journal, require no consideration from us, and we shall merely present short abstracts of those which have not been already brought to the notice of our readers.

On the opening page Mr. HENRY LEE communicates a case of much interest, and one which, so far as our reading enables us to judge, we believe to be exceedingly rare, if not unique. The patient was a girl ten years old who suffered under "*imperfect development of the circular muscular fibres of the rectum and vagina.*" There must have been absence of the perineum itself, for the rectum and vagina had a common opening, such a condition of the parts being represented in the wood-cut incorporated in the text. We are not told how far down the recto-vaginal septum extended, yet that a partition did exist is evident from the fact that examinations of either organ are spoken of as having been repeatedly made. The uterus was rudimentary.

The case presented itself for the relief of obstinate constipation, which had lasted to the formation of an abdominal fecal tumour, which reached down to and distended the cloaca. The symptoms were alleviated by the free use of a scoop and stimulating purgatives, but speedily recurred when the treatment was suspended, and appeared to be dependent upon the imperfect muscular power of the bowel. As the case only admitted of temporary relief and will be most likely to present itself again, we shall hope to hear of it at some other time, and that we shall then be furnished with a more accurate, or, at least, more elaborate anatomical description.

We recollect as a child, when forbidden to eat buckwheat cakes, making up our mind that our doctor was much influenced in his opinions as to what was digestible and what was not, by his own likes and dislikes, and we cannot escape from a similar mental process, and concluding, although, perhaps, upon equally slender data, that Mr. WILLIAM SPENCER WATSON is not a slave to tobacco.

We arrive at this opinion from the suspicion he expresses that "*a case of idiopathic hyalitis*," of which he narrates the history, had its origin in the use of that vegetable bane. Now we fail to see why the occurrence of so very rare an affection as inflammation of the vitreous body without implication of any other ocular tissue, may not just as well coincide with the use of potatoes or tea, but we are not informed whether the patient used either of these articles. Mr. Watson speaks of the great rarity of the disease, and refers to the experiments instituted by Donders and Pagenstecher, who obtained directly opposite results. In our opinion the history of this case, as told, certainly tends to prove the accuracy of the diagnosis of hyalitis. The patient, a middle-aged man of temperate habits, save for the use of tobacco and beer, was almost entirely blind in both eyes; the vitreous body and lens were very turbid; there was much pain and tenderness but no increased tension; both irides responded to the use of atropia, the right more fully than the left; and while there was some sclerotic injection, it did not possess the characteristics of an iritic zone. In the absence of any other cause the trouble was supposed to depend either upon syphilis (of which, however, no reliable history could be obtained) or tobacco. The case came under treatment upon the ninth day of its existence. Under vigorous mercurial medication, and the interdiction of the use of tobacco immediate improvement took place, and proceeded to complete recovery.

The next surgical paper in the volume is the elaborate one by Mr. Hutchinson upon *Abdominal Section in Cases of Intussusception*, which has attracted so much attention, and was given in abstract in the number of this Journal for January, 1874, page 257. This is also the case with Mr. Tufnell's article upon *the Successful Treatment of Aneurism by Position and Restricted Diet*, the salient points of which were presented to our readers in the number for April, 1874, page 540, while at page 547 of the same number will be found a notice of *Dislocations of the First and Second Pieces of the Sternum*, by Walter Rivington, M.S. Lond., F.R.C.S.

Large Adenocele, complicated with Milk Cyst, is the title of an interesting, thought short, contribution by Mr. F. Le Gros Clark. The tumour made its appearance in the breast of a girl aged sixteen, enlarging gradually for six years, at which time the patient came under Mr. Clark's care, two years after her marriage. At the time of her admission into St. Thomas's Hospital the woman was in good health, and was suckling a child seven months old from the unaffected breast. The tumour was connected with the left breast, very large, measuring twenty-six and a half inches in circumference, firm, doughy, without fluctuation like a normal breast during lactation, and milk could be expressed from the nipple. The cutaneous veins were much distended, but there was no discoloration or tenderness, although some engorgement of the axillary lymphatic glands existed. The tumour, weighing eleven pounds and having its greatest bulk below the nipple, was removed, the nipple being included in the incisions, which last fact Mr. Clark afterwards regretted, as he did not find it necessary to remove the whole gland. Upon cutting into the mass from behind it was found "to consist of an enormous milk cyst, surrounded by succulent solid walls, on which were milk tubes and at least one extra cyst." The smaller cyst contained very firm cheese, while the larger one was filled with two pints of apparently fresh cream. The cyst walls were of varying thickness up to two inches, and the solid structure, weighing between eight and nine pounds, appeared to be continuous with the tissue of the breast itself. From the result of microscopical examination Mr. Clark, following Mr. Birkett (*vide Guy's Hospital Reports*, 1855), regards the growth as an "adenocele with ducts

or sinuses and secretion." The patient made a good recovery, but experienced slight inconvenience at her next confinement from engorgement of some residual gland tissue; this did not last more than a few days, however, and was followed by no bad results.

Mr. HENRY LEE contributes a *Case of Primary Excision of the Ankle-joint*, which was done to remedy a compound luxation in which the lower extremities of the tibia and fibula projected through a wound on the front of the joint. The internal malleolus was broken off from the tibia, remaining in its normal position, attached to the lateral ligament. Mr. Lee sawed off the projecting ends of the bones, removed the upper articulating surface of the astragalus, and leaving the internal malleolus undisturbed, dressed the wound antiseptically. After a somewhat delayed convalescence a very useful limb was ultimately preserved, with only half an inch shortening, and firm union of the opposing bones. Through what we suppose to be an error of the printer, the age of the patient is not given, and we are thereby deprived of all knowledge of a factor which is, perhaps, of more importance than any other to the practical surgeon when called upon to make a prognosis in such cases.

From his experience in the above case, Mr. Lee has been led to adopt and recommend a new operation for excision of the ankle different from the one now in use, originally proposed by Mr. Hancock. After performing numerous operations upon the cadaver to test his opinions, Mr. Lee advises to *first* make a longitudinal incision over and down to the internal malleolus, which he removes with the aid of a Hey's saw; *second*, remove the outer malleolus by a corresponding incision upon the opposite side, then, the internal malleolus being out of the way, *third*, lateral luxation can be easily produced and the ends of the tibia and fibula with the surface of the astragalus can be removed with facility. Our author expresses the opinion that partial resections must always do poorly from the extreme slowness with which articular cartilage undergoes disintegration and absorption, and our own experience leads us to regard the objection as well taken.

On the Treatment of Rickety Deformities of the Legs by Operation is the title of an article by Mr. HOWARD MARSH, of St. Bartholomew's Hospital and of that for Sick Children. Four cases are recorded, in three of which simple breaking of the bones of the leg by subcutaneous section and the application of direct force was practised, and one case in which wedges of bone were removed from the tibiæ. In each case an operation was done upon both legs at different times, so that in this paper we have really the history of eight instances in which the practice recommended has been successful. Mr. Marsh does not consider that we are justified in lightly resorting to what may sometimes prove a very serious procedure, but advocates such a step only in those cases where, when there exists great and crippling deformity, we are unable to produce a simple green-stick fracture by a proper application of force, which plan of treatment he has found sufficient in the majority of cases coming under his care. The lithograph appended to the paper certainly shows a most gratifying result.

The paper upon *Cases of (so-called) Ichthyosis Linguæ*, by WILLIAM FAIRLIE CLARKE, Assistant Surgeon to Charing-Cross Hospital, contains the histories of sixteen instances of this affection. The characteristics given of the disease are that it is always a papilloma which may last quiescent for many, even twenty or thirty years, and then become epitheliomatous. It would appear to be always confined to the oral cavity, invariably beginning upon the dorsum of the tongue. Very rarely an affection presenting similar appearances exists upon other parts of the body congenitally, but from the facts that, in these instances, it is con-

genital, and shows no tendency to become cancerous, it should not be regarded as the same disease. From the place of beginning it gradually extends to the adjacent mucous membrane as an overgrowth of the papillæ and epithelium, having a silvery white appearance quite characteristic. The papillæ are hypertrophied to an extreme degree, sometimes standing out separately, at others several coalescing, or we may observe both the discrete and concrete forms upon the same tongue. The disease never entirely leaves the invaded part, and though it may be much modified by the condition of the general health, never is cured, and, as stated before, ends in cancer. In nature it would appear to be a chronic inflammation of the papillæ combined with impaired power to throw off the constantly reproduced epithelium. In four cases the irritating cause appeared to be local, while in one, inflammation of the internal ear preceded, and seemed to give rise to the trouble, suggesting a nervous pathology, but in the remaining eleven cases no cause whatever is ascribed as the starting-point by the several observers. It appears to be confined to the male sex in early manhood and middle life. While it is sometimes associated with syphilis, often there is no discoverable venereal history, nor does it prove amenable to antisyphilitic remedies. Mr. Clarke's advice is to excise it at once, if seen when very small, but if at all extensive, more than three-quarters of an inch in diameter, to let it scrupulously alone, merely paying strict attention to the general health; when it becomes epitheliomatous, however, it must be treated as cancer and excised at once without delay. Two lithographs, one of them coloured, illustrate the paper, which must certainly be regarded as an important contribution to our knowledge of the subject, and will well repay a careful study.

A Case of Necrosis of the Jaws and other Bones from the Fumes of Phosphorus, by William Scovell Savory, F.R.S., is remarkable for the extent of the disease, which was even sufficient to produce a fatal result. The patient was a boy eighteen years old, who had been engaged in the match trade for five years. The whole lower jaw, being entirely loose, was easily removed before the formation of any new bone, with the object of mitigating the extreme sufferings of the patient, and in six months an entirely new jaw had taken its place. At the expiration of this time the case terminated fatally from the pain and consequent exhaustion attendant upon the extension of the disease. After death the upper maxilla and all the bones entering into the formation of the nasal cavity, together with portions of the sphenoid and ethmoid bones, were found extensively involved, being worm-eaten and covered with pumice-like deposits; even the enamel of a molar tooth was destroyed. The new jawbone, nearly resembling the edentulous maxilla of a very old person, is represented by two wood-cuts. The very complete restoration of this bone is referred to by Mr. Savory as a remarkable point in the case.

Thinking that the disastrous results which sometimes follow Mr. Critchett's operation for staphyloma are dependent upon injuries sustained by the ciliary nerves, Mr. Robert Brudenell Carter proposes *an improved method of Abscission of the anterior portion of the Eyeball*. With a view of avoiding any possible injury of the ciliary nerves, Mr. Carter, after dividing the conjunctiva close to and all around the cornea, inserts a suture in the tendon of each of the recti muscles at a little distance from the cornea, then, dividing the tendons close to their insertion into the sclerotic, he shaves off the front of the ball, and draws the gaping wound together by the sutures, which have a good hold in the straight tendons, and effectually close the incision without involving the tissues of the eyeball by the insertion of a foreign body in it. The operation strikes us as an ingenious one, and should it prove successful upon more extended

trial, will be of value by enabling ophthalmic surgeons to preserve a large and mobile stump well fitted to sustain an artificial eye. A patient was exhibited to the Society, at the time this paper was read, upon whom Mr. Carter had successfully performed the operation described. S. A.

We shall next invite attention to the medical papers.

Mr. WILLIAM M. ORD contributes *Some Notes of a Case of Duchenne's Pseudo-Hypertrophic Muscular Paralysis, with special reference to the Temperature of the Overgrown Limbs, and with general remarks.* There is nothing in the clinical history of this case calling for special notice at our hand; we shall therefore pass at once to the consideration of Mr. Ord's observations in regard to the temperature of the legs. These which had undergone great hypertrophy were always found to be warmer than the thighs. The results of the first observation were as follows: Right thigh, 83.0°; right calf, 85.6°; left thigh, 83.6°; left calf, 85.7°. After the child had been exposed for a few minutes to a temperature of 62° Fahr., the figures were, right thigh, 81.5°; right leg, 85.4°. On another occasion the temperature of the left thigh was 87.5°; left calf, 89.7°. Similar observations were made on three other occasions with the result of finding an excess of temperature in the calf of from 1.8° to 3.9° as compared with that of the thigh. A small piece of the muscles of the calf was obtained by means of an emporte-piece or tissue explorer and placed under the microscope, when it was found that the muscular fibres were of full size, well-defined, and free from fat or other accompaniments of degeneration. The striæ were fine, clear, and close. Between the fibres an unusual proportion of fibrous tissue was observed, and also an apparent excess of nuclei on the surface of the sarcolemmata. No excess of fat was detected in this case, but in cases in which the disease is more advanced, not only oil but a large quantity of adipose tissue is found between the muscular fibres. With this overgrowth of fibrous tissue, Mr. Ord is inclined to connect the comparatively high temperature of the calves. In answer to the assertion which is not infrequently made, that the increase in size is a real muscular hypertrophy due to the extra work thrown upon certain muscles by the weakness of others, Mr. Ord replies by saying that he satisfied himself by carefully watching his patient, that the muscles of the calves were, relatively, not stronger than the other muscles, and that they did not do more duty. On the contrary, when he moved about, the boy used the thin but much stronger muscles of the upper limbs to a much greater extent than the enlarged muscles of the legs.

In regard to the pathology of the disease, the author says:—

"After this, I think that the conclusion is fair that first the hyperæmia, and second, the overgrowth, are due to internal causes—to causes affecting nervous centres. And I would further suggest that it is possible that the disease may have its origin in the sympathetic nervous system, outside the spinal cord and brain. The whole story is rather one of weakness following faulty nutrition, than of paralysis of muscular nerves followed by wasting of muscles."

The author points out certain characters which distinguish this disease from the progressive muscular atrophy of infancy, which Duchenne believes has been mistaken for it by Drs. Lockhart Clarke, and Bastian, who think they have proved the existence of degeneration and wasting of the anterior columns and gray matter of the cord, whereas in the examinations of the spinal cord of subjects of the pseudo-hypertrophic paralysis made under Duchenne's own directions, no morbid appearances have been detected. The progressive muscular atrophy of infancy destroys the muscles in, as its name implies, a progressive, although irregular way, and after the destruction of the muscular fibres, pro-

duces local and partial deformities, which are, to say the least, not common in the affection under consideration.

The paper is illustrated by three wood-cuts, giving views of the patients in different positions.

Although not next in order, we shall now, for the sake of convenience, notice Dr. Lockhart Clarke and Dr. Gowers's communication *On a Case of Pseudo-Hypertrophic Muscular Paralysis*. The patient in this case was, as in the other case, a boy, but was older, being 14½ years. Soon after the commencement of the disease his calves were observed by his mother to be unusually large; but long before his death the muscles of the trunk as well as those of the limbs were very much wasted. Many of the muscles were also contracted. Both of the Achilles tendons had been divided nearly four years before the fatal termination of the case by Mr. Adams, who had charge of the patient; and just before this, the notes say, the elbows were flexed and could not be straightened. The hip-joints were flexed, the thighs being brought up towards the abdomen; and the knee-joints were bent at a right angle; both being rigid from muscular contraction, which could not be overcome.

A very full description of the microscopical appearances of the muscles and spinal cord is given, which we shall, of course, be obliged to abridge very considerably.

"The gastrocnemius muscles were," the authors say, "small, not more than one-third of the normal size. Each muscle presented the appearance of a mass of adipose tissue. On section it was pale in colour and greasy to the touch. No trace of red tint could be seen in it. Under the microscope it consisted for the most part of distended fat cells, which lay between and separated widely bundles of muscular fibres. The fat cells were quite similar to those constituting an ordinary lipoma; they varied in size from $\frac{1}{215}$ to the $\frac{1}{1053}$ of an inch. In a few a nucleus could be seen. They contained, when fresh, no crystals. The amount of connective tissue between them was small." "The spinal cord, as it was removed from the body, seemed perfectly healthy and of normal consistence; but after being very carefully hardened in chromic acid, thin sections made in every region revealed, under the microscope, varied and extensive lesions. There was disintegration, in a greater or less degree, of the lateral gray network which is so conspicuous in this region between the caput cornu posterioris and the *tractus intermedio-lateralis*, and through which the spinal accessory makes its way in that tract. The tract itself was to a certain extent in a state of incipient disintegration, and on one side was, in many sections, traversed by a dilated and congested bloodvessel around which the tissues had begun to suffer. The white columns were not perceptibly altered, but one lateral half of the anterior white commissure was entirely destroyed and replaced by granular *débris*, by exudations, and extravasated blood-globules, which also filled the triangular space at the bottom of the anterior median fissure."

Both the lateral and posterior white columns were in many sections much damaged by sclerosis. Very similar changes were detected in other parts of the spinal cord, and these are well shown in three plates which accompany this paper.

Dr. Charles J. B. Williams, after briefly referring in his paper *On the Acoustic principles and construction of Stethoscopes and Ear Trumpets* to the history of the discovery of the stethoscope, describes an instrument which he says he has found freer from objections than any other with which he is acquainted. It is made of ebonite, which has the great advantage of being easily formed into any shape, and of being also light, durable, and a good conductor of sound. In regard to the form, he says it is obvious that this should insure complete contact with both chest and ear; and this not only because the con-

duction of sound is thereby facilitated through the solids, but also because the inclosed column of air is thus made *air-tight*, and all external noises and motions being so excluded, is the more sensitive to the vibrations proceeding from the chest. A trumpet-shaped pectoral end secures this perfect contact much more certainly than the conical one in general use. This stethoscope is constructed in two forms; either in a single piece, or with the ear-piece capable of being taken off and of slipping into the hollow trumpet end.

In regard to ear trumpets Dr. Williams says, the best are made of silver, plated metal, or Japanned iron; but aluminium, on account of its lightness, may also be used for this purpose. Polished ebonite also forms a good reflecting surface, and although inferior in power to metal, it has advantages over it in point of lightness and freedom from intrinsic sound. The simplest and most efficient reflector is a hollow cone with a wide base open to receive as large a body of sound as possible, which is reflected directly to the apex, and conveyed through a short curved tube to the ear. To prevent the *conch-like roar* he opens one side of the cone by oblique truncation and prolongs the opening by a slit to within a few inches of the ear. In so doing, he says, "we get an instrument which has an obvious resemblance to the ear of many quadrupeds; and there can be little doubt that this form of external ear is wisely designed to aid their hearing in the simplest and most efficient way, by directing and concentrating sounds, without the confusing reverberations produced in complete tubes and cavities.

The paper is illustrated by four wood-cuts showing the two forms of the stethoscopes and the ear trumpets he recommends.

The patient in Dr. SAMUEL GEE'S *Case of Renal Calculi*, was a man thirty-eight years of age, who inherited a gouty diathesis from his father, and who had been from childhood liable to attacks of pain in the right loin. Five months before his death the pain in the right loin became continual. About the same time, he noticed a swelling in the right half of his belly. When he came under Dr. Gee's observation, a tumour could be felt, corresponding in position with the visible swelling, and occupying a large part of the right side of the belly. The upper part of this tumour was hard as stone; the lower part was soft, and gave an imperfect fluctuation; moreover, even in this part hard spots could be reached by deep pressure. After death this tumour proved to be the right kidney, greatly enlarged. Its pelvis, which was very much dilated, contained: 1. A great calculus, weighing 36 ounces. 2. About a thousand smaller calculi. 3. A large quantity of calculous dust and purulent urine. The left kidney was also greatly enlarged, and its pelvis was distended by a calculus which weighed 9¾ ounces. Many of the calculi included under the second heading were unusually large, nine of them being larger than a cherry. Concerning the chemical composition of the calculi, Dr. Gee writes: The bulk of the large calculus was found by Dr. Russell to consist of phosphate of magnesia and ammonia nearly pure. Its brown nucleus was more complex in its nature, consisting of oxalate of lime, with traces of phosphate of magnesia and ammonia, carbonate of lime, and uric acid.

Putting aside a case in which, according to Civiale, Pohl found a stone which weighed more than five pounds in the kidney of a princess, two of these calculi are the largest on record.

Dr. JOHN HARLEY, in his report of *Cases of Disordered Muscular Movement, illustrating the uses of Hemlock*, takes occasion to call the attention of surgeons to the advantages they may derive from the judicious use of a plant which relaxes muscular fibre without diminishing the common sensibility or

disturbing the intellectual functions. The muscles of the head and face are apparently affected to a greater degree by it than those of the rest of the body. Hence, as it produces, when pushed, complete relaxation of the orbicularis, it may frequently be given with advantage before the performance of operations upon the eye. It will also be found useful in overcoming the spasm which so frequently renders difficult the removal of foreign bodies from the œsophagus. It has this advantage over anæsthetics, that patients under its influence are able to help the surgeon by their efforts, and to guide them by their sensations.

The medicine was given in three cases of spasm and in one of epilepsy with hemiplegia, and in all with decided benefit to the patient. In the case first reported, in which the symptoms were as severe as in any of the others, there was chronic intermittent spasm of the right pectoral muscles and the left sterno-mastoid, and of the mass of muscles on the side of the neck—a condition which, although not entirely relieved by conium, was very much benefited by it. The largest dose ordered was ℥iv twice a day, but on one occasion a patient took by mistake ℥v. The effects of the hemlock in the case already referred to were as follows: "A fluidounce of the succus produced some giddiness and weakness of the knees, lasting for three-quarters of an hour; short of two fluidounces there was no marked effect on the spasm. Three and a half fluidounces caused great muscular relaxation, and at the end of two or two and a half hours, when the action had attained its maximum force, there was inability to rise from the sitting posture, or to walk without assistance, and as often as the knees were flexed to a right angle or a little less, he fell, and was unable to rise without assistance." There was, in addition, complete ptosis and relaxation of the orbicularis, moderate dilatation of the pupils, double or multiple vision, hanging of the lower jaw, loss of power in the masseters and temporals, and slow, painful, and imperfect deglutition. These effects came on a quarter of an hour after taking the medicine, and gradually increased in intensity until the end of the second or third hour, and then gradually declined and disappeared towards the end of the fifth hour. After doses of four ounces, they lasted for nine hours. The patient who took the dose of five ounces could neither speak nor move his legs for half an hour, but the effects passed off as usual.

If there be any special weakness of a set of voluntary muscles, hemlock will be found to affect these sooner and more powerfully than healthy muscles. It may therefore be used as a measure of the power of different sets of muscles. In regard to the extent to which coneism may be carried, Dr. Harley says the limits of safety are usually reached when deglutition is impeded; for here we trench on an involuntary act, but it may be carried thus far with perfect safety. In concluding his paper, Dr. Harley says: "I would not, however, that any one should be misled by the supposition that all spasmodic affections—all cases of epilepsy, for example—are benefited by hemlock. There is much to be learned in this direction; but, speaking generally, those spasmodic affections which may be expected to yield most readily to its influence have a cranial origin."

Dr. Symes Thompson communicated to the society, for Dr. Leonard H. J. Hayne, some notes *On the amount of Carbonic Acid found by experiment in the Air on board Wooden Frigates*, in which very much the same conclusions are announced as were reached by Dr. Rattray, who published a paper entitled *An Analysis of Ship Air and its Effects*, in the preceding volume of these *Transactions*.[1] The latter, indeed, seems to think phthisis and scrofula

[1] See number of this Journal for October, 1874.

more common among seamen than the former, whose experience is confined to the royal navy, in which the seamen are of course picked men. The great impurity found by Hayne in the air between the decks and in the lower parts of the ship was carbonic acid. The amount varied at different times and places from 1.03 to 3.21 volumes per 1000. Ozone was never present in large quantity, except on the upper deck. It has been proposed to work an electrical machine occasionally on board ship, to make up the deficiency of ozone in the deeper parts; but the author seems to think that this could only be done at the expense of the already greatly reduced supply of oxygen.

We regret that the space at our command does not permit us to notice Mr. FRED. A. MAHOMED'S paper *On the Etiology of Bright's Disease, and the Pre-albuminuric Stage*, quite as fully as its importance demands. The author has noticed that the pulse occurring in erysipelas, the exanthems, and pregnancy—conditions in which albuminuria frequently arises—does not differ materially from that which is usually observed in acute Bright's disease, and that the latter very closely resembles that which has been described and illustrated by the sphygmograph as occurring in the chronic form of the disease. *Both* conditions are accompanied by a pulse of high tension; that is to say, one which usually requires a considerable amount of pressure, and especially is distinguished by a prolongation or undue sustension of the tidal wave. He therefore suspects that the vascular condition is the cause of the albuminuria, and not the albuminuria that of the vascular condition, as generally supposed. This high tension in the arterial system which precedes the appearance of albumen in the urine, is ascribable, in his opinion, either to the presence of a noxious material in the blood, such as lead, alcohol, uric acid in gout, scarlatinal poison; or else to a sudden chill, causing contraction of the superficial vessels and congestion of the internal organs. If this condition of high tension be sufficiently severe, he continues, transudation of the characteristic crystalloids of the blood, notably hæmoglobine, occurs before albumen appears in the urine, and they can be detected in that fluid by the guaiacum test for blood. A continuance of this condition gives rise to the appearance of albumen in the urine, and, if still unchecked or uncontrollable, Bright's disease in one of its forms ensues. On the other hand, if checked before the albumen appears, or immediately after its appearance, by a brisk purge or other appropriate means, the condition is suddenly changed, the tension disappears from the pulse and the crystalloids from the urine. The following is the procedure which he recommends for the detection of the crystalloids in the urine: Place a drop or two of the urine in a small test-tube; add one drop of the tincture of guaiacum and a few drops of ether; agitate, and allow the ether to collect at the top, forming an upper layer of fluid. If hæmoglobine be present, the ether carries up with it the blue colour that is produced, leaving the urine colourless below. This test is of course open to fallacies; saliva, nasal mucus, and a salt of iodine in the urine, all cause a development of a blue colour with the tincture of guaiacum, some without and some after the addition of ozonic ether. But all these fallacies may, the author says, if proper care be used, be avoided. He has applied this test to urines of all descriptions—to the pale urine of hysteria, to intensely high-coloured urine, to that of phthisis and other wasting diseases, to urine containing bile, sugar, excess of uric acid, lithates, phosphates, and excess of mucus; but in all these with negative results. The reaction can be obtained only in the earliest stages of either the acute or chronic form of Bright's disease, usually before the albumen appears, or when it is present in only small quantities. It does not occur in chronic albuminuria,

except when blood is also present in the urine; when this does occur, the guaiacum test gives by far the earliest indications of its presence that can be obtained.

Mr. Mahomed doubts whether it is strictly correct to apply the term inflammatory to acute Bright's disease. It is not an actual inflammation of the kidney that is the cause, in his opinion, of the symptoms, but a general blood-poison by which the kidney is not alone affected, but suffers in common with other organs, notably those of excretion. In this connection he refers to the views of Drs. Walshe, Fenwick, and Wilson Fox, with which our readers are doubtless familiar. The last-named physicians have demonstrated that a similar condition to that which exists in the kidney exists also in the stomach and duodenum; it probably exists also throughout the intestinal tract. Mr. Mahomed, reasoning from analogy, believes that the skin is affected in a similar manner, namely, that the sweat glands become blocked from a similar proliferation of cells, and are unable to act, thus producing the dryness and roughness of the skin with which all are so familiar in Bright's disease. If a patient having a quantity of effete poisonous matter in the blood, which he is excreting as rapidly as possible, has the function of his bowels or of his skin suddenly or gradually arrested, extra duty will be thrown upon the kidney. This organ, therefore, receives an increased blood supply, and that under a higher pressure than usual. The next step in the process is an increased production of the epithelium of the tubules.

In regard to the hypertrophy of the heart and arteries, so frequently met with in chronic Bright's disease, the author says:—

"I have attempted to prove that this high pressure in the vascular system, is not the result of kidney disease, but of a primary blood poison, and I believe that the fact of increased pressure demonstrated to exist in the capillaries, by exudation through their walls of the crystalloids, negatives Dr. Johnson's view of the production of hypertrophy of the heart by the stopcock action of the arterioles; for if this existed, the pressure in the capillaries would not be increased. I should imagine, moreover, that the effort of the muscular coat of the arterioles to prevent over-distension by the increased pressure would be sufficient to account for their hypertrophy, while the increased work of the heart to overcome the increased pressure in the vessels would be amply sufficient reason for a similar change in that organ."

Albuminuria is frequent during pregnancy, and is, in the author's opinion, due to the fact that the blood is overcharged with effete material, for the mother has to discharge the excrementitious matters of the fœtus by her own excretory organs; her blood is therefore in a measure poisoned, and like a scarlatinal convalescent, does not bear its normal relation to the tissues, while the organs of excretion have to do increased work, and that under increased pressure; should then one of them be interfered with, as by constipation or a chill, albuminuria appears a very probable result.

The paper is illustrated by numerous cuts representing sphygmographic tracings obtained in cases of Bright's disease.

Mr. Edward Sparks, in the course of an article *On a Disease of the Skin produced by the Acarus Folliculorum, illustrated by Cases observed in the Dog*, alludes to the fact that, notwithstanding that the experiments of Dr. Gruby, performed in 1846, when he was professor of anatomy and histology in Paris, show that extensive loss of the hair and an unhealthy condition of the follicles of the skin follow the inoculation of dogs with acari, most of the writers on dermatology believe that the parasite gives rise to no disease—not even to comedones or acne. Reasoning from some observations which he has recently made upon dogs that were the subjects of this disease, he believes this opinion

to be incorrect. The dogs, three in number, which had acquired the disease in an unknown way, all died in consequence, it was believed, of the loss of their hair. In all three of the animals there was an enormous number of the acari present, dilating the hair-follicles and filling the sebaceous glands, so as completely to destroy their secreting cells. There were also inflammatory changes in the cutis of greater or less extent, arising from the irritation of the acari and the scratching of the dog. The paper is illustrated by a plate showing the alterations in the hair follicles produced by the acarus.

The concluding paper in the volume is by Dr. HORACE DOBELL, and is entitled *A Contribution to the Natural History of Pulmonary Consumption, consisting of an Analysis of One Hundred Male Cases of Hæmoptysis.* This analysis shows the relation in point of time between the first hemorrhage and the first loss of weight to be as follows: First hæmoptysis occurred before first loss of weight in 8 per cent. of the cases. At the same time as first loss of weight in 10 per cent., and after first loss of weight in 82 per cent. The relation which cough bore to hæmoptysis in these cases, as regards priority, will be seen from the following: First cough occurred before first hæmoptysis in 87 per cent. At the same time as first hæmoptysis in 12 per cent. After first hæmoptysis in 2 per cent. Cough preceded first loss of weight in 69 per cent., and was preceded by it in 31 per cent. of the cases. Dr. Dobell, while holding that hemorrhage is not often the cause of lung disease, admits that in some cases it may be so. "I am disposed," he says, "to place it only as one item, and that a very occasional one, in a large and important group, embracing all foreign substances which find their way into the peri-vascular and peri-alveolar tissue of the lungs, and by their irritation there, set up lymphatic (adenoid) and connective tissue cell-proliferation and its consequences." J. H. H.

ART. XXVIII.—*Transactions of the American Ophthalmological Society.* Tenth Annual Meeting, 1874. 8vo. p. 274. New York: Wm. Wood & Co., 1874.

THIS number of the *Transactions* contains more than twice as many pages as the last, and represents an amount of good work most creditable to a comparatively small society, only twenty-six members being present.

The first paper is by Dr. H. D. NOYES, who reports a case in which *astigmatism* seemed to have been *produced by tenotomy of* the internal *recti muscles* for the relief of diplopia due to paresis of the left externus. The left internus was cut three times and the right once. Five years after the first operation a myopic astigmatism of $\frac{1}{18}$ in each eye had increased to $\frac{1}{15}$ in the left eye, and $\frac{1}{36}$ in the right, and two years later there was $\frac{1}{12}$ in the left and $\frac{1}{24}$ in the right. He calls attention to the common association of myopic astigmatism and muscular insufficiency, and suggests the possibility that a certain number of cases of astigmatism may have their origin in defective muscular equilibrium.

Dr. WM. THOMSON reports several *cases of conical cornea* in which vision had been very much improved by correction with cylindrical glasses of high power, and urges the importance of making a careful optical analysis of such cases before proceeding to operative interference.

An interesting point in these cases is that "their histories demonstrate that the optical defects were induced in eyes that were probably emmetropic, by

prolonged strain of the eyes in reading with insufficient illumination when the individuals were rendered vulnerable by causes which produced general debility of their systems."

Dr. Haskett Derby contributes a paper "*On the Atropia Treatment of Acquired and Progressive Myopia.*" Since Donders, in his classical work on Refraction and Accommodation, stated, in speaking of the pain and fatigue suffered by many myopic persons when using their eyes for near work, that "a species of spasm of the accommodation is not unfrequently associated with this irritable condition, and an even-increased degree of myopia is found, which disappears, however, as the irritability diminishes," the occasional occurrence of such accommodative spasm has been admitted by all ophthalmic surgeons. Dr. Derby shows, by his own statistics and those of other authors, that this complication is much more frequent than is generally supposed, and adopts the view of Dobrowolsky that the symptoms of irritation depend on the cramp of the accommodation, and do not, as Donders supposed, act as its cause. This view naturally suggests the therapeutic use of atropia, which has accordingly been employed by Dobrowolsky, Hosch, and Scheiss.

"To Prof. Scheiss belongs the credit of utilizing the researches of Dobrowolsky for ophthalmic practice. So long, he justly observes, as myopia was considered largely hereditary and entirely incurable, the ophthalmic surgeon contented himself with giving suitable cautions and prescribing, in general terms, a course of dietetics calculated to arrest the progress of the trouble he had no hope of ameliorating. But with the knowledge that the affection commenced in many cases with an accommodation spasm, antedating the organic change, and with the certainty that it was often acquired during school years or in early life by individuals manifesting no hereditary predisposition, born emmetropic and even hypermetropic, to a much greater extent than had ever been imagined, came the idea of probable arrest and possible diminution, and even cure.

"Withdrawing his patients from all use of the eyes on near objects, and arming them with protection glasses, he ordered twice daily the application of a solution of one part of atropia to 120 of water, and kept this up ordinarily for three or four weeks."

Dr. Derby has treated sixty-seven cases in this manner, and from his own experience, as well as from the results obtained by others, draws the following conclusions:—

"That the emmetropic eye, through undue or disadvantageous use, acquires myopia much more frequently than has previously been supposed, and that such acquired myopia is very apt to be progressive, commencing with spasm of accommodation and going on through a state of congestion and irritation to the structural change characteristic of this error of refraction.

"That paralysis of accommodation by means of atropia, persisted in during a period of several weeks, and furthered by rest of the eyes, shaded glasses, and in extremely aggravated cases by local blood-letting, offers a reasonable prospect of preventing the progress of myopia, in some instances of lessening its amount, and in occasional recent and slight cases of removing it altogether.

"That in cases of progressive myopia it is reasonable to expect positive results from an annual course of treatment similar to the above, carried on during those years which experience has shown to be most favourable to the advance of the myopia, thus enabling the patient to tide over a critical period."

A tabular report of the author's cases is appended to the paper. Ten of these cases were of hypermetropic eyes, and in them, at least, we think the accommodative spasm must be considered as an effect rather than a cause of irritation; the effect of overstraining of the ciliary muscle in its constant effort to accommodate the refraction of the eye to its shortened axis. The irritable condition of these eyes and their apparent myopia would probably have been

best relieved by persistently wearing the proper convex glasses. We are not sure that a certain number even of the myopes would not have been benefited by the concave glasses that corrected the real, not the apparent, myopia. According to Dobrowolsky, "myopes being, under all circumstances, unable to see distant objects distinctly, are less tempted to relax their accommodation for the far than emmetropes. The ciliary muscle is thus apt to remain in a constant state of tension." If this explanation is correct, why is it not rational, theoretically at least, to remove the cause by giving such patients glasses that will enable them to see distant objects with distinctness? The author justly says that "the whole subject needs and deserves further investigation and the collection of much more numerous statistics." It has been shown that we have in atropia a valuable therapeutic agent in the treatment of myopia, the extent of its applicability can be determined only by just such practical clinical work as Dr. Derby has done.

Dr. H. D. NOYES reports a "*case of extreme myopia*" in which a pair of Steinheil glasses were ordered for reading. These glasses consist of solid cones with the surface at the larger end convex and the opposite one concave. They act on the principle of the Galilean telescope, and are practically small opera glasses.

Dr. JEFFRIES reports a series of experiments on *visual acuteness* with Snellen's, Dyer's, and Green's test-types, hung in the sunlight while he remained in the shade. He states that in this way he can distinguish No. XX. at forty-seven feet. This indicates that he has more than double the average acuteness of vision, that too low a standard has been selected, or that the acuteness of vision varies over a very wide range with different intensities of light. Perhaps all of these factors may exist to a greater or less extent. After all, the test is only an approximation, and taking all ages, conditions, and circumstances into consideration, perhaps it is as close a one as can be reached.

Dr. E. G. LORING describes a "*New Modification of the Ophthalmoscope.*" It differs only in its mechanical construction, from one figured by Knapp in the last number of the *Archives of Ophthalmology and Otology*, and the main features of both may be found in an instrument introduced by Wecker, of Paris, about two years ago. We have been treated to so many ophthalmoscopic novelties in the last year that, it must be confessed, we are growing a little *blasé*, and beginning to fear that of the making of new ophthalmoscopes there is no end.

Dr. W. F. NORRIS reports two *cases of optic neuritis* with "choked disk," one resulting from cerebellar sarcoma, and the other from lead poisoning. The paper is accompanied by five very beautiful chromo-lithographs, representing the microscopical structure of the tumour and sections of both disks.

The author concludes that "the excess of the cerebro-spinal fluid, and the dilatation of the outer sheath of the optic nerves, and consequent increase of sub-vaginal space, would seem to show that, in these cases at least, the choked disk had been produced by the pressure of the subarachnoid fluid at this point."

Dr. CHAS. S. BULL reports on the "*circulation of the optic nerve and retina in diseases of the spinal cord and membranes dependent on caries of the vertebræ.*" Eleven cases were examined. No constant lesion was found, but in all but one case the disks were congested, and the retinal veins enlarged.

A *syphilitic gumma in the ciliary body* is described and figured by Drs. LORING and ENO. The accompanying engraving of a microscopical section of the tumour by Dr. Eno, is a fine specimen of etching, a most enviable accomplishment for a pathologist.

Dr. JOHN GREEN contributes an article "*on color-tests for ametropia, based upon the chromatic aberration of the eye,*" founded on an experiment of Dr. Wollaston recorded by Thomas Young.

"He looks through a prism at a small lucid point, which of course becomes a linear spectrum. But the eye cannot so adapt itself as to make the whole spectrum appear a line; for if the focus be adapted to collect the red rays to a point, the blue will be too much refracted, and expand into a surface; and the reverse will happen if the eye be adapted to the blue rays; so that, in either case, the line will be seen as a triangular space."

Exhibiting this experiment to numerous friends, Dr. Green finds "that the emmetropes and myopes among them all describe the spectrum of the lucid point as triangular, with the apex red; the hypermetropes, on the contrary, see it with the apex violet, or at any rate with the violet end quite narrow. We have thus a direct and delicate test for ametropia, not dependent on the recognition of letters."

"In measuring myopia by this method, I have succeeded best by directing the attention to the red apex of the spectrum: the weakest concave glass, through which the apex appears as a sharp red point, being the measure of the myopia for red rays. Adding to this the correction for the brighest part of the spectrum, viz., the yellow, a correction which I have found to be about $\frac{1}{12}$, we have the measure of the actual myopia in the meridian corresponding to the direction of the refracting edge of the prism. In hypermetropia also, it has seemed to me most satisfactory to take the red end of the spectrum for observation, noting the strongest convex glass, through which the apex appears perfectly sharp."

Dr. Green also suggests that this experiment of Wollaston's affords a striking illustration of the non-achromatism of the eye.

Dr. WADSWORTH reports *two cases of intra-ocular sarcoma*, Dr. THOMSON, one of *pigmented sarcoma* Dr. MATHEWSON, one of *melanosis of apparent traumatic origin*, and Dr. BULL *two cases of syphilitic lesion of the eye.*

Dr. HASKETT DERBY gives a detailed account of a *case of sympathetic ophthalmia* in which the symptoms persisted after enucleation, and were relieved by removal of the extremity of the optic nerve and surrounding tissues. The improvement, however, was not permanent. Two fresh attacks of inflammation occurred a few months afterward.

Dr. JEFFRIES reports a case in which a *piece of steel in the globe caused sympathetic trouble* in the other eye *thirteen years after the injury* was received. "The metal had lain years in the choroid without affecting the other eye. When the ciliary region became affected, as shown by external redness, then only did the formerly well eye begin to show trouble, which enucleation at once relieved."

Dr. AGNEW gives an account of the *trephining of the cornea for the removal of a foreign body deeply imbedded in its substance.*

A *new method of treating blepharospasm* is described by Dr. MATHEWSON. The treatment was suggested by that employed by Dr. Van Bidder, of New York, in a case of ptosis, and consisted in raising the upper lid by means of a slender band of India rubber, fastened near the edge of the upper lid below, and to the forehead above, with strips of isinglass plaster and collodion. The band was worn without inconvenience for twelve days, when the spasm was found to be entirely overcome.

Dr. Agnew reports a *case of double, extremely minute, and apparently congenital lachrymal fistula.*

Under the head of *new instruments*, Dr. MURDOCK describes a lid speculum, so constructed that it can be removed very quickly, and without danger of pressure on the ball. The upper arm is movable, and drops at once on the turning of a screw. He uses, in connection with it, a crossed branched self-

retaining conjunctival forceps, with a series of ratchet teeth on its under surface, which catch on a horizontal bar attached to the speculum. The two together form an automatic eyeholder, which may be found very useful when operating without an assistant. Dr. M. has also added a cutting edge to the crochet-pointed strabismus hook of Dr. Theobald, with the design of using it at the same time as a hook and a knife.

Dr. HAY describes an instrument for facilitating section of the optic nerve in enucleation of the ball:—

"It is a kind of two-branched blunt hook. The branches are smooth, thin plates, so shaped as to fit the posterior surface of the eyeball. They are somewhat parallel with each other, long enough to pass about three-quarters the way around the posterior half of the eyeball, and separated by an interval of a quarter of an inch to allow the optic nerve to pass between them."

Dr. NOYES gives a description of a retractor of the upper lid:—

"It has been devised after reflecting upon the manner in which the upper lid is lifted, viz., by being, as it were, rotated over the spherical surface of the eyeball. In other words, because, in being elevated, the upper lid retreats under the roof of the orbit, an effectual instrument to perform this movement must follow the lid into the cavity of the orbit. The method by which this new retractor acts is at once apparent. It catches the tarsal margin as a pen is laid in a rack, and carries the whole lid under the orbital roof as far as may be desired."

He also describes a fixing forceps designed to be attached to the lid speculum to enable the operator to dispense with the services of an assistant. Woodcuts of all these instruments are furnished, without which it is almost impossible to give an intelligent description of them.

One case of *herpes zoster ophthalmicus* is reported by Dr. WADSWORTH, six by Dr. JEFFRIES, and six by Dr. MATHEWSON. Two of these cases, one by Dr. Wadsworth and one by Dr. Mathewson, are of special interest, as they afford exceptions to the rule, usually considered invariable, that when the whole side of the nose is affected in this disease the eye does not escape. Dr. Wadsworth suggests a variation in the nerve distribution, and, in support of this theory, quotes a case reported by Prof. Turner, in which the frontal nerve gave origin to a long slender infratrochlear branch which passed below the pulley of the superior oblique muscle, to be distributed along with the infratrochlear branch of the nasociliary nerve." Dr. Mathewson, at the suggestion of Dr. Prout, treated his patients by local galvanization, which was very "successful in relieving pain and apparently in modifying other symptoms."

Dr. ALTHOF contributes a paper entitled "*Canthoplasty*—a Clinical Study." The object of this operation is to relieve the ball from excessive pressure of the lids by enlarging the commissure, and it has often been "tried in various conjunctival affections without having ever been methodically put to a severe test." The author has given it an extensive trial and has arrived at the following conclusions: "In trachoma, diphtheria, and blenorrhœa it may prove the chief agent of treatment. In trachoma, and phlyctenular conjunctivitis, and keratitis, its principal merit lies in shortening the attack, preventing relapses, relieving suffering quickly, and supporting powerfully the efficiency of other remedies. In diseases of the lids requiring operations it greatly improves the chances of the latter. In ulcus serpens and diffuse keratitis it may become a desirable support of the treatment so far in use."

Dr. PROUT reports a case of *Schneller's operation for entropion*. An elliptical portion of the skin of the lid is included by two incisions, but left in place, instead of being removed as in the usual operation. The skin above and below it is then dissected up, and the two free margins brought together by sutures

over the circumscribed portion. The covered piece acts the part of a splint in stiffening the lid, and is said, after a time, to lose its epithelium and unite with its covering.

Dr. AGNEW gives *statistics of one hundred and eighteen recent cases of cataract extraction.* The methods of operating used were those known as Graefe's, Liebreich's, Lebrun's, and the "old flap." Dr. Agnew says: "My opinion has, at times, been much unsettled as to the method which offers the best prospect of useful vision in the greatest number of cases. I have, however, about come to the conclusion that the Graefe operation is the best, provided the middle of the cut is not made far from the junction of the sclerotic and clear cornea." Dr. Knapp is in the habit of making the same modification in the Graefe operation, as stated in the last number of the *Transactions.* "The centre of the flap touches, or nearly touches, the upper transparent margin of the cornea." This agreement of two of our most experienced operators on this much discussed question is worthy of note. The following table gives Dr. Agnew's results:—

Successes	77½ per cent.
Partial successes	10½ " "
Failures	9½ " "
Unknown	2½ " "

In the cases recorded as successes vision ranged from $\frac{5}{20}$ to $\frac{20}{100}$, and in the partial successes from $\frac{1}{15}$ to the ability to count fingers. Anæsthetics were used in the majority of cases.

Dr. J. F. NOYES describes a "*new method of operating for strabismus.*" The correction is "effected by shortening of the opposing or elongated muscle, and without disturbing, also, the point of attachment or insertion of the tendon on the ball." And the operation is performed in the following manner:—

"The patient being fully under the influence of chloroform or ether, the lids secured wide open by a stop speculum, a horizontal incision or slit is made in the conjunctiva directly over the tendon, sufficiently long, through which the tendon is lifted out on a blunt hook. The tendon is then divided quite near to its insertion on the ball, leaving enough end or stump so that the other end of the divided tendon can be carried under it, lapped and secured by sutures. The amount of shortening thus effected must, by actual measurement, equal the deviation to be corrected. If it be found necessary to do this, a portion from the end of the tendon may be cut off before carrying it under and lapping as already described."

We are glad to learn that a Report on the Progress of Ophthalmology, which has been omitted in this and in the proceeding number of the *Transactions*, has been provided for in the next by the appointment of Dr. O. F. Wadsworth, of Boston, to the work. G. C. H.

ART. XXIX.—*Transactions of the American Otological Society.* Seventh Annual Meeting, 1874. 8vo. pp. 127. Boston: James Campbell, 1875.

THE first paper is the "*Report on the Progress of Aural Surgery*" during the year, by Drs. BURNETT and BLAKE. The names of the gentlemen appointed to this service were sufficient warrant that it would be faithfully and ably done, and this expectation has not been disappointed. As it is itself a summary, it is scarcely possible to condense it fairly, and we must advise those who are interested in the subject to read the report. It will be seen that much interesting and valuable work has been done in aural surgery during the year, though it must

be admitted that no brilliant novelty has been introduced; aural, like ophthalmic, surgeons having been occupied of late rather in diligently developing the ground already brought under cultivation than in seeking to enlarge their boundaries.

The report is divided into three parts: Anatomy and Physiology, by Dr. Burnett; Pathology and Therapeutics, by Dr. Blake; and Reviews and Book Notices by each; and a full bibliographical record is appended.

The second paper is by Dr. BUCK, on "*The Ultimate Forms of Granulation Tissue in the Ear.*" Some of these growths have a covering of skin or mucous membrane, according to their locality, but a larger portion consist of simple granulation tissue. A portion of the cells formed go to build up tissue, and increase the growth, while the majority are cast off in the form of pus. This tissue may remain for an indefinite period in a state of nearly absolute inactivity; it may be cast off from its base by wasting of the pedicle; it may assume the form of a localized hypertrophy of the subcutaneous or submucous connective tissue; it may undergo horny degeneration, or it may change into true osseous tissue. The histories of cases illustrating these different forms are given.

Dr. MATHEWSON reports a "*Case of Otitis Media Purulenta, with Sinus Opening into the Pharynx.*" Pus could be seen issuing from a sinus opening to the outside of the tonsil through the anterior palatine arch. Pressure at this point or against the side of the neck below the mastoid process forced pus into the external meatus. Pus also came freely into the meatus when the patient stretched his mouth widely open.

Dr. POMEROY reports a case of *aural polypus* having a cartilaginous and osseous base.

Dr. BLAKE contributes a paper on the "*Mechanical Value of the Distribution of Weight in the Ossicula.*" To determine the distribution of weight in the adult ossicula, "the bones were carefully measured *in situ*, and a line drawn from the centre of the processus brevis across the corpus incudis, and base of the capitulum mallei to the base of the processus gracilis—this line corresponding to the axial line of vibration of the malleus and incus. The bones were then removed from their attachments and carefully prepared to remove all soft tissue, and a section made along the line drawn, by means of a hair saw." The proportion of the weight of the superior portion to that of the inferior was found to be about 15 to 8. This "preponderance of weight in the upper portion of the malleus and incus, acting as a counter-balance, serves to increase the delicacy of a mechanism which responds to sound waves in excursions so infinitesimal that the highest power of the microscope cannot render them visible."

Dr. BLAKE also has an article on "*Perforations of the Membrane of Shrapnell in Purulent Inflammation of the Middle Ear.*" The laxity of this part of the membrana tympani and its position near the upper margin make perforations at this point comparatively rare. Dr. Blake refers its occasional occurrence to localized disease of the contiguous parts, and particularly to ulceration and granulations or polypoid growths, occurring in the upper and outer portion of the tympanic cavity.

Dr. Burnett also reports a case of perforation of this part of the membrane, with polypoid growths.

Dr. H. D. NOYES reports a case of "*Irritation of the Chorda Tympani, Paralysis of Facial; Polypoid Growth upon the Membrana Tympani, Periostitis of the Malleus and adjacent Bony Textures.*" There was complete paralysis of the left side of the face, and an irritation of the left side of the tongue, increased by pinching the pinna or even by passing the finger over the

side of the face. The patient noticed a sensation of taste whenever he attempted to move the paralyzed side. There was a polypoid growth the size of a pea upon the upper and middle portion of the membrane springing from the manubrium of the mallens. By the study of this case, "no new facts are shown, but the results of experiments upon animals are confirmed. It appears that the nerve has no control over the muscles of the tongue but simply excites sensations of pain and of taste, which are perceived chiefly at the side and upon the back of the tongue. It also, in a marked degree, provokes secretion from the submaxillary gland, and in a less amount from the carotid."

Dr. GREEN contributes a paper on "*Neuralgia in and about the Ear.*"

"That the ear and its neighbourhood should be subject to neuralgia can excite no wonder when we consider its nervous relations; for it is no exaggeration to say that no other organ in the body is in direct communication with so many important nerves as the ear.

"These neuralgias have been of two varieties, reflex and non-reflex. Of the reflex variety, we may have neuralgia of the tympanic plexus, or of the nerves of the Eustachian tube. Of the non-reflex variety we may have neuralgia of the auriculo-temporal branch of the trigeminus; a zoster of the small branches of the trigeminus or facial which supply the tragus and walls of the meatus; a zoster of the small branches supplying the fossa of the helix, and also a cervico-occipital neuralgia, in which the pain is referred to the mastoid region."

The most frequent form of reflex neuralgia is that excited by carious teeth. Cases have been observed in which reflex neuralgia of the tympanic plexus was excited by disease of the larynx through the auricular branch of the pneumogastric.

This connection is also occasionally shown by the occurrence of "ear-cough" excited by irritation transmitted from the ear to the larynx.

Dr. WEBSTER reports a "*Case of Chronic Suppurative Inflammation of the Middle Ear,*" terminating fatally from the extension of the inflammation to the internal ear and the brain. No *post-mortem* was permitted.

Dr. POMEROY reports nine "*Cases of Tenotomy of the Tensor Tympani Muscle, done posteriorly to the malleus handle by Gruber's instrument.*" The hearing was improved in two cases, and the tinnitus diminished in five. There were unpleasant results in one case only, in which the operation was followed by violent suppuration, and a large perforation of the membrane.

Dr. BURNETT reports a case of "*So-called Ménière's Disease,*" in which "most of the attacks of vertigo, always accompanied by perfect consciousness, were characterized by an apparent motion in a vertical plane from front backwards, *i. e.* in the plane of the superior semicircular canal."

"In this case we have a collection of clinical phenomena, partly of a subjective nature, most strikingly in accord with the recent brilliant and important experiments of Mach, Breuer, Cyon, and Curschmann, all of which have added many facts tending towards the conclusion that, although the semicircular canals may not be devoid of acoustic functions, they seem to possess well-marked functions presiding over the pose of the head, and mediately over that of the entire body." G. C. H.

ART. XXX.—*Transactions of American State Medical Societies.*

1. *Transactions of the Texas State Medical Association.* Sixth Annual Session, April, 1874. 12mo. pp. 210.
2. *Proceedings of the Medical Association of the State of Arkansas.* Fifth Annual Session, Oct. 1874. 16mo. pp. 43.
3. *Transactions of the Mississippi State Medical Association.* Seventh Annual Session, April, 1874. 16mo. pp. 118.
4. *Transactions of the Medical Society of the District of Columbia.* January, 1875. 16mo. pp. 24.
5. *Proceedings of the First Annual Meeting of the Eastern Medical Association.* Held at Newbern, N. C., Nov. 1874. 16mo. pp. 72.

1. THE present number of the *Texas Medical Association's Transactions*, though principally made up of minutes and papers connected with the last annual session, contains also the proceedings, and a few addresses and memoirs, of the two meetings immediately preceding. Two of the three presidential addresses illustrate the curious proclivity of our professional orators to indulge in historic retrospect, stretching back into the dimmest antiquity.

In one of the addresses we find stated a singular evidence of popular inappreciation of medical knowledge and services. We refer to the recent appointment by the Galveston Chamber of Commerce, of a committee of five to investigate the late epidemic, commonly spoken of as one of yellow fever. This committee consists of five lawyers.

The need has, here as elsewhere, been experienced, of legislative regulation of medical practice. Indeed a law has been passed, designed to protect the upright and qualified practitioner against unscrupulous rivals; but it is so loosely drawn as to effect little good. The president recommends that the Association frame a proper and efficient act, which the legislature can be urged to pass. It is also advised that the Association should be endowed with the functions of a State Board of Health, existing arrangements not having proved satisfactory.

The portions of this pamphlet likely to be of permanent value are the various accounts of the epidemic of 1873, as observed by different men and in different counties. Most of the reporters style it yellow fever; others, dengue; one, hemorrhagic intermittent or remittent; and one inclines to deem it malarial diarrhœa, or a combination of pernicious intermittent with cholera. The epidemic was certainly one of great interest and of marked peculiarities. All these observers attribute its prevalence in certain places to local causes, especially to filth and generally bad sanitary surroundings. They do not think it spread by contagion, and condemn quarantine measures as utterly powerless for good, while productive of incalculable distress. We incline to believe that this disease was not yellow fever, but a malignant malarial fever with hemorrhagic symptoms. It attacked many persons who were believed to be fully acclimated, and thus safe from yellow fever.

Among surgical cases and operations reported we find the following: *imperforate anus, radical cure of hernia, ovarian tumour,* and *vesical calculus.* Notes are given of a case of *hydrophobia*, of several cases of *puerperal convulsions*, and of four cases of *cerebro-spinal meningitis* treated with ergot and bromide of potassium. Dr. Wallace presents a report upon *hæmaturia miasmatica.*

As is too often the case with the transactions of our State Medical Societies, but little care has been bestowed upon the literary style of some papers. Some

addresses also deal a little too much in the glittering generalities of rhetoric. But even in these directions, the indiscretions here observed are far less gross and astounding than we have met with formerly in some less distant quarters. Most of the practical matter, especially concerning the epidemic, is valuable, and is reported in an intelligent and straightforward manner.

2. We are very sorry to learn from the last publication of the *Arkansas Medical Association* that certain unhappy dissensions, which called for action at a previous meeting, have since so far increased as to cause the withdrawal from the Association of its President and several Fellows.

The presidential address contains some very sensible remarks and recommendations, clothed in rather flowery language, as to the need of legislation to exclude from the practice of pharmacy and of medicine unqualified pretenders, to punish abortionists, to secure efficient registration, to compel vaccination, and to organize and support a competent board of health.

A most wonderful recovery from compound and comminuted fractures of right thigh and left leg is here reported. As the case has been already communicated to the profession through the *Medical and Surgical Reporter*, Aug. 15, 1874, we need not repeat this extraordinary history, except to say that, two months after the communication to the *Reporter*, the patient was walking about town with no perceptible limp.

A terrible case of *Elephantiasis Arabum*, here described, has also been previously published.

Among a few brief reports of cases we find one of an anomalous case of *cerebro-spinal meningitis* (?) of a remittent type; another of *encephaloid disease of the bowels* in a child. Dr. Dunlap reports the successful treatment of a fractured humerus, where the site of an external wound, and the ensuing symptoms, indicated that the brachial artery was severed.

3. We notice from the records of the *Mississippi Medical Association* that the subject of alcoholic intemperance has been brought prominently before that body. A committee has been appointed to collect statistics, and to plan a bill for establishing a State Inebriate Asylum. This bill, if approved by the Association, is to be proposed for adoption by the Legislature.

The address of the President, Dr. Taylor, entitled *Popular Education on Medical Subjects*, is characterized by good sense and by clear and vigorous expression. Its latter pages overpass the strict limits of the nominal topic, to make a just and forcible exposition of the true aims and duties of medical associations. One suggestion, looking towards an elevation of the standard of professional education, is to deprive the colleges of the authority to admit men into the practice of medicine, and vesting this authority in the State Society. We firmly believe that, in some such manner, there should be removed from the medical schools the demoralizing temptation to attract large classes by underbidding each other as to time, labour, and money requisite to procure a diploma.

In the Annual Oration, Dr. Hicks treats, in a very pleasant and sensible vein, upon the rights and duties of medical men, as regards each other, their teachers, the public, and the government. We were a little dismayed when we found the Doctor going back to Esculapius for a fair start, but were all the more agreeably surprised to find the paper so readable.

A paper by Dr. Vaughan upon *Improvements in the Treatment of Uterine Diseases*, seems to have for its leading motive the idea that in most diseases of the womb, so called, the physician's attention and treatment would be more wisely directed to the ovaries than to the uterus. This proposition is enforced by a

somewhat full exposition of the close connection of these organs, as to blood-supply and innervation, and of the physiology of the parts.

A paper upon *Hypodermic Medication* is not without interest.

In a brief memoir upon *Malarial Hæmaturic Fever*, the statement is upheld that the hemorrhagic symptoms occur only in patients whose spleen is hypertrophied and liver diseased.

A reporter upon the famous epidemic of 1873, as it appeared in Vicksburg, represents that the *dengue* and the *yellow fever* prevailed simultaneously, though the former both preceded and outlasted the latter. He describes patients as attacked with the *dengue*, becoming convalescent in a few days, and then being smitten with the graver malady. We doubt whether this view of the cases would be generally accepted.

Dr. Hill reports a case of *Cranial Fracture with Brain Wounds*, so severe that the reported recovery seems almost incredible. The patient was a negro lad, seventeen years old. From one wound, involving the cerebral substance, was removed a piece of bone four inches by nearly two. Another fracture extended four inches in length. Slight fever for a few days is recorded, with no unfavourable symptoms and the wounds healing by first intention. Two or three months afterwards patient is reported as well, with loss of nearly one-half of frontal bone on the right side, besides a long opening in left parietal.

A recovery almost equally extraordinary, after operation for strangulated hernia, is reported by the same gentleman. In this case, also, the patient was a negro, but not young.

4. The *Medical Society of the District of Columbia* still adhere to their excellent plan of printing only discussions and cases, and excluding all orations and addresses.

A case of *Red Softening of the Middle Lobe* of left cerebrum, accompanied with aphasia, gave rise to an interesting debate. The disease was found to extend slightly into the posterior lobe, but not at all into the anterior; and involved white substance principally. Patient was a German, and lost first his ability to speak English, and later the use of his mother-tongue. Intelligence appeared intact.

A somewhat full discussion was occasioned by a reported case of *Addison's Disease*.

In a case of *pyonephrosis*, the diseased mass weighed six pounds, and contained four pints of pus, with two calculi.

A singular and somewhat dubious case is reported as an instance in which a displaced colon compressed and strangulated the stomach at the cardiac end. Unfortunately the examination which gave rise to this diagnosis was made four days after burial, when the organs were distended with gas.

The connection between *biliary calculi* and *hepatic abscess* was the subject of considerable debate.

A terrible case of *hydrophobia* in a child of four years gave rise to free expressions of opinion concerning the disease.

5. *Eastern Medical Association of North Carolina.*—From the report of the executive committee of this new society, we learn that its organization was due to a determination on the part of the better portion of the profession to make a vigorous and united effort to withstand and arrest prevailing tendencies towards professional demoralization. The report speaks plainly and boldly, revealing certainly a lamentable decadence of true medical spirit and morality. Open violations of many articles in the Code of Ethics are stated to be of

constant occurrence. We fear, too, from some indications noticed, that such sins are by no means confined to the more obscure or impoverished practitioners. For the boldness and energy with which this new organization is striving to infuse a better spirit and begin a reformation, much credit is due.

The President, Dr. Chas. Duffy, Jr., delivered an annual address, in which he set forth with great clearness and good sense the directions and methods in which members may contribute to the prosperity and usefulness of the Association, and to the advancement of medical science.

Dr. Attmore contributed a paper upon *Acute Aural Catarrh*. There are two or three other brief articles requiring no special notice. B. L. R.

Art. XXXI.—*Cyclopædia of the Practice of Medicine.* Edited by Dr. H. Von Ziemssen, Professor of Clinical Medicine in Munich, Bavaria. Vol. I., Acute Infectious Diseases, by Prof. Liebermeister, of Tübingen; Prof. Lebert, of Breslau; Dr. Hænisch, of Greifswald; Prof. Heubner, of Leipsig; and Dr. Oertel, of Munich. Translated by R. H. Fitz, M.D., and Charles P. Putnam, M.D., of Boston; Arthur Van Harlingen, M.D., of Philadelphia; James T. Whittaker, M.D., of Cincinnati; Edward W. Schauffler, M.D., of Kansas City; and Francis Delafield, M.D., Horatio Bridge, M.D., Thomas E. Satterthwaite, M.D., Lewis A. Stimson, M.D., J. Haven Emerson, M.D., and Normand Smith, M.D., of New York. Albert H. Buck, M.D., New York, Editor of American edition. 8vo. pp. xvi., 708. New York: William Wood & Co., 1874.

The *Cyclopædia of the Practice of Medicine*, if it meets with better success than has attended the recent publication of a very similar work in England, will consist, when completed, of fifteen volumes, containing "a series of treatises written," to use the words of the preface, "by men who are skilled in the different departments of medicine," and will unquestionably form the most valuable compendium for reference in the English language. We think we have sufficient warrant for this assertion in the very creditable manner in which the writers who have contributed articles to this volume have done their work; and the names of the physicians who are engaged upon the succeeding volumes, are a sufficient guarantee that they will be of equal excellence. The volume has the fault—to a certain extent inseparable from the nature of the work—of being much too heavy to hold in the hand while being read without producing fatigue, and we therefore regret that the publishers did not select a style of printing somewhat like that adopted in *Reynolds' System of Medicine*, which would have reduced the bulk of the volume at least one-fourth, and which might also have enabled them to have issued it at a slightly diminished price. It gives us great pleasure cordially to endorse the American editor's opinion in regard to the admirable manner in which the various articles have been rendered into English.

The diseases treated of in this volume are typhoid, typhus, relapsing, and yellow fevers, cholera, the plague, dysentery, and diphtheria. As it is impossible, within the limits of a brief notice, to do more than refer to the articles on most of these diseases, we shall attempt an analysis of two of them only, selecting for this purpose that on typhoid fever by Prof. Liebermeister, and that on diphtheria by Dr. Oertel.

Prof. Liebermeister prefaces his article on typhoid fever by some remarks on the nature and causes of infectious diseases, in which he takes occasion to announce his belief in the theory of a *contagium vivum* as the cause of this class of affections. As early as 1865, he says, he thought himself justified in making the prophecy that this theory would soon be the prevailing one, and that, under its influence, investigation would take directions that would probably lead to results of the greatest importance—a prophecy which he regards as having been actually fulfilled, in part, during the last few years; for it is now generally admitted that it represents a view "which points more clearly than any other to order in the chaos of facts."

In addition to the more usual division of infectious diseases into contagious and miasmatic, the author makes a third class, which he calls the miasmatic-contagious, and in which he includes typhoid fever. "This disease," in his opinion, "is not contagious in the proper sense of the word, for it is never transmitted by direct contact. It is not purely miasmatic, for external conditions alone are not sufficient to produce it. The presence of a person suffering from this disease, or of substances derived from such a person, is necessary. The poison is propagated continuously. It travels from the diseased individual to the localities which are favourable for its growth and multiplication, and from these localities again into the human body." In other words, a patient with typhoid fever may be treated in a general ward, provided it be well ventilated, without danger of the disease being contracted by the nurses, or those who are brought in contact with him, or by the other patients. Moreover, while there can be no doubt that the specific poison is contained in the feces, these appear to be incapable of disseminating the disease when first passed; and yet it is equally certain that when added to decomposing matter, or when contaminating drinking water, they have often been the only recognizable cause of infection. The author, therefore, concludes that the poison causing typhoid fever has to undergo a development not only inside, but also outside the body. He accordingly ranges himself with those who believe that no matter how foul a privy or sewer may be, the emanations from it, provided it contains no dejections from typhoid fever patients, are without power to cause the disease in a healthy individual subjected to their influence. They are not innocuous, it is true, for they may give rise to gastro-intestinal irritation, as well as to other conditions, but never to typhoid fever.

He discusses at some length Pettenkofer and Buhl's theory in regard to the connection of epidemics of typhoid fever with variations in the height of the water-springs; the latter having shown that in Munich, as a rule, while the water steadily rises, typhoid decreases; and that, while the water sinks, typhoid increases. This he explains in the following way: "When," Buhl says, "the water-level sinks, the layers of earth, saturated with water and organic substances, which are left exposed to the air, undergo extensive changes of a putrefactive character. When the water rises, these layers of earth are again covered, decomposition stops, and the products of previous decomposition are covered with water." So far the author agrees with Buhl and Pettenkofer, but beyond this point his views diverge from theirs. They hold that the typhoid poison passes from the earth into the air, and is inspired into the human body. Prof. Liebermeister, on the other hand, teaches that "the lower the water is, the greater must be the proportion of solid matters dissolved or suspended in it. In localities where typhoid fever is endemic, where the specific cause is in the earth, or constantly soaking from the privies into the earth, this poison must be relatively more abundant in the water the lower the latter is. Much also of the matter which drains from the surface

into springs is washed away when the latter are high before it can settle to the bottom." There is, moreover, evidence, he says, that it is only in the immediate neighbourhood of masses of decomposing matter that the typhoid poison exists in the air in sufficient quantities to poison the air, which would hardly be the case were Buhl's theory the correct one. "A man," the author adds, "who avoids breathing the exhalations of privies and sewers, who does not handle linen foul with typhoid dejections, who does not drink unboiled water from infected springs, is as safe in a place where typhoid epidemic is raging as in one where not a case of the disease exists. The typhoid fever is not acquired in the streets, nor in houses of which the privies are not infected."

When speaking of the treatment of typhoid fever, Prof. Liebermeister says that there are but two remedies which appear to him to have any specific influence on the disease, viz., calomel and iodine. He formerly gave the first of these in doses of from 7½ grains to half a scruple, repeated three or four times in the course of the twenty-four hours. Iodine he has used either in the form of the iodide of potassium, in doses of from a scruple to a drachm during the day, or in solution; one part of iodine being dissolved with two parts of the iodide of potassium in ten parts of water. Three or four drops of this solution were given in a glass of water every two hours. The results of these treatments are shown by the following: In 377 cases of typhoid fever non-specifically treated, the mortality was 18.3 per cent. In 223 treated with calomel, it was 11.7; and in 239 treated with iodine, it was 14.6. Much better results than these have been attained by means of the antipyretic treatment, and especially by means of that form of it which is generally known as the cold-water treatment. Whenever the thermometer in the axilla of a typhoid fever patient indicates a temperature of 102.2°, Prof. Liebermeister orders him to be placed in a cold bath of 68°, and kept there for at least ten minutes. He is then to be wrapped up in a dry sheet and put to bed, lightly covered, and given a glass of wine. In very severe cases it is necessary to repeat the baths every two hours, so that twelve baths are given every twenty-four hours. In some instances that have occurred in the hospital at Basle, the number of baths required by a patient during his entire illness has exceeded two hundred.

Quinia has been also in the author's hands a valuable antipyretic remedy, and when given in sufficiently large doses will often obviate the necessity for the frequent use of cold baths.[1] The high estimate which he places upon this drug in the treatment of this fever will be apparent from the following quotation: "Yet," he says, after giving it as his opinion, that it would be wrong to treat a severe uncomplicated case of typhoid fever without the systematic abstraction of heat, "if I were forced to the unpleasant alternative of adopting only one or the other of these two means—cold water or quinine—I should, in the majority of cases, choose the latter." The comparative results of what is called an indifferent treatment, and of the antipyretic treatment carefully carried out, are shown by the following figures: In 1718 cases treated before the use of cold water was introduced, the rate of mortality was 27.3 per cent. In 1121 cases treated since its introduction the rate of mortality was only 8.2 per cent.

Some objections have been made to the cold water treatment. It has been said to increase the frequency of hemorrhage from the bowels, of perforation,

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[1] Prof. Liebermeister recommends very large doses of this medicine, as much as from twenty-two to forty-five grains being administered in the course of an hour. He prefers to give it in powder, prescribing 7½ grains every ten minutes until the desired amount has been taken.

and of relapses. Prof. Liebermeister shows, by a recourse to statistics, that the frequency of intestinal hemorrhage has materially diminished under the cold-water treatment, and that nothing conclusive has yet been established with regard to its influence on the frequency of perforation. While admitting that it appears to favour the occurrence of relapses, he thinks that this is not to be ascribed to any inherent defect, but rather to the fact that a large proportion of severe cases, in which, of course, patients are most liable to this accident, recover under it than under any other form of treatment.

We cannot close our notice of this article without calling attention to the very meagre diet Prof. Liebermeister allows his patients. The recommendation of mucilaginous barley-water, thin oatmeal gruel, and the like, combined with not very strong meat broth, and with diluted milk, as the most suitable nourishment, seems like a tendency to return to the gum-water of our forefathers. Unquestionably there are physicians who run to excess in the matter of food; but, on the other hand, we should regard the chances for life of a patient in this country as slim indeed, if allowed in the beginning of his attack no better fare than this.

Dr. Oertel's views of the pathology of diphtheria appear to have been largely influenced by the fact that we owe to him and to Hueter the discovery that diphtheritic membranes, the subjacent tissues, and even the blood itself, contain in great number vegetable organisms, or bacteria, to which he gave the name of micrococci; these organisms being, in his opinion, the cause and not a mere accidental result of the disease. He regards diphtheria, therefore, as a local disease in the beginning, but having a tendency to become general in consequence of the infection of the blood. The reasons which he gives for this opinion may be briefly stated to be as follows: 1. The peculiar manifestation of diphtheria occurs earliest and most constantly on those portions of the mucous membrane over which the air in respiration must sweep, and which most easily come in contact with an infecting agent, conveyed by articles used in eating or drinking, or in some other way; 2. Diphtheria fixes "itself at the point of inoculation—the centre of infection, if we may so call the part first attacked—and radiates from that place throughout the whole body." This is a fact which has been established by the author's experiments upon animals; no matter in what part of the body the poisonous principle of the diphtheria may have been introduced, the first manifestations of the disease are observed at the site of the inoculation. In this respect diphtheria differs strikingly from glanders, in which the nasal mucous membrane is invariably affected.

The micrococcus is a variety of the bacteria, being round in shape. When brought in contact with the mucous membrane, or with an abraded surface of skin, it excites an inflammation which may vary in degree. Thus in some cases it presents itself under the form of catarrhal inflammation, in others under that of croupous; while in a third set of cases the irritation is so great, or the powers of resistance so slight, that gangrene is produced. In any form septic symptoms may occur in consequence of the passage of the micrococci into the blood, but these are of course most likely to supervene in the severer forms. These micrococci seem to have the power of diffusing themselves to an immense extent, for they have been found in the kidneys, in the lymphatic glands, and the tissue surrounding them—many of the lymphatic ducts being plugged by them—and even in the membranes of the brain and spinal cord, as well as in almost all the tissues of the body.

In addition to the capillary hemorrhages which have been generally described as among the lesions of diphtheria, Dr. Oertel describes certain alterations in

the nervous system which are not without interest, since they throw some light upon the pathology of the paralysis which is so apt to occur as a sequela of this disease. In one case Buhl found, he says, "that the spinal nerves were thickened at the roots, that hemorrhages had taken place, and that the sheaths of the nerves, and here and there also the strips of connective tissue running between the bundles of nerve-fibres and the ganglion-cells of the sensitive roots, were filled with lymphoid nuclei and cells. That such infiltrations are also present in the further peripheral course of the nerves is not improbable, still no direct observations upon this point have been published." "Buhl thinks," he continues, "that the scantier and smaller localized accumulations of nuclei and cells which are produced in the lower grades of infection are absorbed again, after undergoing fatty degeneration, without having made themselves particularly noticeable; but that the more numerous and larger collections of the higher grades are followed by a perceptible thickening of the connective tissue. When these growths proceed to a further development into connective tissue, the more or less marked distension of the fresh connective tissue at first disappears, the tissue contracts, and consequently embraces circularly the sheaths of the nerves and the bundles contained therein. Finally, it must be borne in mind that, as a result of absorption, the thickest and most contracted cicatrix becomes later again looser, more pliant, and more movable, that is, the connective becomes normal; consequently, according to Buhl, the nerve symptoms appear when the constricting effect of the thickening of the connective tissue begins, they persist while it lasts, and disappear finally when the thickening diminishes." Much in the above quotation is pure hypothesis, not sustained as yet by a sufficient number of observations to justify us in unhesitatingly adopting it. It is a theory, however, which we admit explains to our mind the occurrence of paralysis at a time when the patient is often apparently fully convalescent from the original disease much better than that which attributes it to the direct effect of the poison. Other marked changes are also found in the spinal cord corresponding in character with those which are observed in disseminated myelitis.

To set up a rapid and abundant suppuration by which the fibrinous exudation may be replaced by a purulent one, the author regards as the most important indication presented by this disease. This is best done by causing the patient to inhale steam. In order that these inhalations may be of service they should not only be frequently repeated, but long continued—as often as every half hour, for a quarter of an hour at a time. An effort should also be made to cause the destruction of the membrane, especially in cases where the larynx is invaded, by various chemical solvents; but these should not be alone relied upon, for they can never be used sufficiently strong to kill the parasite, and consequently are without power to prevent the reformation of the membrane. Remedies to meet the indication of opposing septic infection and general poisoning of the system may also be employed. The most suitable of them are alcohol, freshly prepared and properly diluted chlorine water (containing fifteen to thirty per cent. of chlorine water), solutions of permanganate of potash, one and a half to two and a half grains to the ounce, and of carbolic acid two and a half grains to the ounce, or where this cannot be borne, a like solution of oil of thyme in equal parts of spirits of wine and water. All these substances are, however, not suited for inhalation on account of their concentration, and should therefore be only used as gargles. The author thinks cauterization, the use of astringents, and efforts at mechanical displacement more likely to do harm than good. Cooling and antifebrile medicines should be prescribed at first, but whenever the patient's strength begins to fail it should

be sustained by tonics and stimulants. In fact the general treatment the author recommends is very much the same as would be employed here. We find him, however, cautioning us against the use of strychnia in the management of the secondary paralyses. J. H. H.

ART. XXXII.—*Inflammation of the Lungs; Tuberculosis and Consumption.* Twelve Lectures. By Dr. LUDWIG BUHL, Professor of Pathological Anatomy and General Pathology in the University of Munich, etc. etc. Translated by permission from the Second German Edition. By MATTHEW D. MANN, M.D., and SAMUEL B. ST. JOHN, M.D. 12mo. pp. x., 161. New York: G. P. Putnam's Sons, 1874.

WE know of at least one translation of a German work, recently issued from the American press, which might be read without a suspicion being entertained that it had originally been written in another language. There are others, however, and unfortunately these are the more numerous, in which too much of the original construction and so many foreign idioms have been retained that it is a task to read them. To the latter class the book belongs the title of which heads this notice—containing, as it does, many sentences unintelligible to any one unfamiliar with German. There are a few, indeed, which would puzzle even one possessed of a fair knowledge of the language. What, for instance, do Drs. Mann and St. John understand by the expression, on page 21, "It stipulates no phthisis;" or what do they mean when they say on page 40 that interlobular pneumonia "establishes itself between the lobules of the latter (the parenchyma) in lines diffusely obliterated and connected to form a plexus dividing the pleura in a certain sense into territories, etc." Imperfections of this kind render the book less valuable, as well as infinitely more difficult to read.

Prof. Buhl is well known as the author of the Infection Theory of Tuberculosis—a theory which is best known in this country through the writings of Niemeyer, and which, if it has not met with universal approval, has been adopted by many of our best clinical physicians. In some other respects the views held by these gentlemen differ very materially, and notably so in regard to the form of inflammation of the lungs which is to be regarded as the forerunner of phthisis. It is well known that the latter holds that this may frequently be traced back to catarrhal pneumonia—the former, on the other hand, teaches that strictly speaking there is no such thing as a catarrhal pneumonia, because, the air cells not being lined with an epithelium similar to that found in the bronchial tubes, an inflammatory process cannot extend from the latter into the former. It is true that in many cases of capillary bronchitis the air cells are filled with catarrhal products, but these do not originate in them but in the adjacent bronchial tubes. We have already said that Prof. Buhl denies the existence of a true epithelial lining of the air cells. When speaking on this point, he says that it has more the character of a "lymphatic endothelium sp read out upon the inner surface of the alveolar wall."

"This view," he continues, "is sustained by the fact that the shape and size of the cells are entirely different from those of the bronchial epithelium, while, on the other hand, the resemblance in shape to that of endothelium is scarcely to be mistaken, as Ranvier has already insisted. The lack of continuity, too, observed by many histologists, finds an analogue only in the endothelium of a serous surface. The bronchial epithelium consequently passes over into the

alveolar endothelium, as the tubal epithelium into the endothelium of the peritoneum. The experiments of Sikorsky furnish a convincing proof of this, since from them it appears that there exists in the alveolar wall a plexus of lymph vessels consisting of canals and stellate connecting knots, and that these knots communicate by means of fine openings with the cavity of the lung alveolus. Some may consider the alveolar cavities as broad lymph spaces containing air, and having a lining endothelium—the latter being wanting in the lymph plexus of the alveolar walls."

We have made this long extract because we think it will enable our readers to comprehend better than they otherwise could do the author's views of the pathology of phthisis and tuberculosis.

In addition to the croupous and catarrhal forms of pneumonia, Prof. Buhl recognizes another form which he calls desquamative or parenchymatous pneumonia. This differs from what has usually been described as interstitial pneumonia, inasmuch as the development of connective tissue and subsequent cirrhosis of the lungs is not the only result of the inflammatory process. In the beginning the parenchyma of the lungs is much swollen. This gives rise to a shedding and to an increased production of the endothelial cells of the alveoli. To such an extent does this take place that they may be detected microscopically in the sputa. If the disease continues there is a tendency to the development of connective tissue, and its further course will very much depend upon which of the two processes becomes the predominant one—in one case cirrhosis being produced, in the other, if resolution does not occur, either fatty or caseous degeneration. In regard to the last, the author says that it is caused by the cutting off of the supply of blood to a part of the lung through the swelling of the alveolar walls, and of the stroma containing the vessels. This swelling is due to "a compact, gelatinous, albuminous, plastic infiltration, with development of spindle-shaped and stellate cells," which must of course exercise considerable pressure upon the vessels. In addition to this there is also "a development of cells with exuberant small shining nuclei, accompanying the finest arterial twigs externally, seated in their adventitia, and causing this to swell up into lumps by reason of its irregular force, sometimes losing itself diffusely, and again rising up diffusely." On the other hand, "pus corpuscles or their remnants are nowhere to be found, or at most there are traces of them in the lung parenchyma, probably carried over from the bronchi." It is the tissue itself which, in the author's opinion, undergoes first necrosis and then caseous degeneration. It will be remembered that Niemeyer teaches that the arrest of the circulation is due to the pressure of the accumulated cells within the alveoli, and that the appearances of cheesy pneumonia are due largely to the caseous degeneration which these cells undergo. He also holds that occasionally, although not frequently, croupous pneumonia may be a predisposing cause of phthisis. This Buhl most expressly denies, as he does also for catarrhal pneumonia.

According to the author, a tubercle "has its origin in the connective tissue which contains the juice canals and lymphatics, and particularly in the adventitia of the finer arteries and its lymph-sheaths, and from these points it emerges a well-organized structure. It shows in its finer organization an analogy with the lymphoid organs of the body, such as the Malpighian corpuscles of the spleen, and the lenticular glands of the intestines." The elements which compose it, he continues, "can be developed just as well from the connective tissue cells as from the endothelium, and at one time they take the form of cytoid corpuscles (young connective tissue cells), at another that of giant cells, and again they occupy a middle position in the form of endothelial-like cells."

He therefore places himself among those who consider a tubercle to be a lymphomatous tumour—he considers it, however, a peculiar kind of lymphoid formation. Among its peculiarities are mentioned the presence in its earlier stage of one or more giant cells, the entire want of vessels, the later solidification of the protoplasm of the giant cells, that is, its horny metamorphosis, and the fibroid changes in the connective-tissue capsules.

The reasons which Prof. Buhl gives for believing that miliary tuberculosis is a disease due to specific absorption and infection are as follows: 1. The almost constant presence, in acute miliary tuberculosis, somewhere in the body of one or more centres or masses of caseous degeneration, the results of previous inflammation. 2. In cases where infection has occurred, the cheesy nodes are not entirely encapsulated, that is, they are not inclosed on all sides by firm fibroid tissue. When so inclosed the caseous masses may be regarded as innocuous, because, while the hindrance offered to absorption by cirrhosis and the limiting cicatrization is not absolute, it is still very great. The pus, which is derived, the author says, from the surface of a mucous membrane and retained in the mucous membrane canals, is not in a condition to generate infection, even where it has undergone complete cheesy degeneration. Catarrhal pneumonia and bronchitis, croupous pneumonia and bronchitis, are scarcely able to awaken a miliary tuberculosis. On the other hand, the cheesy masses in the connective tissue, extending to a certain degree by their prolongating into the lymphatics and bloodvessels, may certainly give occasion to infection before the connective tissue has undergone cicatricial hypertrophy. 3. The presence of tubercles in parts of the lung immediately adjoining the seat of caseous masses is evidence in favour of the absorption and infection theory. 4. Their presence in various parts of the body proves a general infection of the blood. 5. Another important argument in favour of this view is based upon the situation of the miliary tubercles in the connective tissue containing the lymphatics of the organ, and the analogy in their histological formation to normal lymphoid organs. 6. Tuberculosis is not an isolated instance of the production of disease by infection; we find analogies in other diseased conditions, in miliary carcinoma, for example. 7. In addition to these points, the fact that tuberculosis can be conveyed from one human being to another must be regarded as favourable to the infection theory. By this is not meant the inheritance of the disease by a child from its parents, but the immediate communication through contagion, both that which takes place from one part of the body to another, and that from one individual to another. 8. Tuberculosis, as a rule, does not coexist with any other disease derived from infection. 9. The final, and at the same time most weighty, argument which he adduces is that which rests upon the results of inoculation, proving as they do that tuberculosis can be conveyed to animals.

In about ten per cent. of the cases of tuberculosis which have come under Prof. Buhl's observation, no cheesy nodes could be discovered, and these he explains by supposing that they have been caused by a peculiar form of inflammation which he calls tubercular inflammation, a process "which not simply by chance, but by its own inherent qualities, possesses the property of necessitating a production of tubercle-lymphoma, and of having, as in the third case, the appearance of the lymphoma coincident with the inflammation, and of having them confined to the tissues in which the inflammation takes place." If the tubercle is really a lymphoma, and the weight of evidence is in favour of this view, and if it may be developed either from the endothelium of the alveola walls, or from the connective tissue uniting these, we can readily understand that inflammation will occasionally result in their production without a previous

infection of the blood having taken place. Tubercular pneumonia is in fact only a higher grade of genuine desquamative pneumonia, the localized expression of a general disease. "This general disease," the author teaches, "is the peculiar constitution, which if we wish to form a scheme according to the degree of intensity sometimes stops in its inflammatory exudation with the formation of spindle and stellate cells (called in the lungs pure genuine desquamative pneumonia); sometimes, however, it goes further, and adds to this a proliferation of the lymphatic endothelium (cheesy pneumonia); and this again carried to a higher degree is accompanied by a production of lymphoma (tubercular inflammation), and may, under very unfavourable conditions, finally run into a purulent infiltration (purulent peribronchitis and lobular suppuration)."

It will be perceived that while Niemeyer, Oppolzer, and others hold that phthisis may, in most instances, be traced back to an attack of catarrhal pneumonia, and that this generally arises from extension of an inflammatory process from the fine bronchial tubes into the air cells, Buhl asserts that the latter never takes place, and that the excessive production of the endothelial cells of the alveoli is the result of an inflammation seated in the interstitial tissue. But they all agree in recognizing, as the rule, an inflammatory origin for phthisis. Whether Buhl or Niemeyer is right as regards the particular form of inflammation, seems to us comparatively a very indifferent matter. Our own experience has led us to the conclusion, that the popular belief that a neglected cold has often been the starting point of consumption is correct, and we think a further confirmation of this opinion is to be found in the frequency of this disease as a sequel to measles, hooping-cough, and other morbid conditions, in which bronchitis is a more or less frequent complication. Nor are we able to coincide with Prof. Buhl in his opinion, that extravasated blood in the air cells is never the cause of inflammation of the lung. The fact that it may be so seems to us established both clinically and experimentally. Any one who will take the trouble to note the temperature of his patient will find that it is higher two or three days after a hemorrhage than before it. In a communication to the June number of Virchow's *Archiv* for 1872, Dr. Julius Sommerbrodt[1] shows the consequence of injecting blood into the air cells through the trachea is catarrhal pneumonia.

In addition to the topics alluded to above, one lecture is devoted to the consideration of peri-bronchitis, which want of space prevents us from noticing.

Prof. Buhl has a high reputation as a pathologist, and his book is the fruit of much work and thought. J. H. H.

ART. XXXIII.—*Reports of American Hospitals for the Insane.*

MANY of these reports contain little beyond the modest record of continued usefulness, and therefore call for no criticism. In some of them, however, we find ideas or statements upon which it may be interesting to comment.

As usual, the report of the *Pennsylvania Hospital for the Insane* at Philadelphia, for the year ending December 31, 1874, is full of good sense and sound doctrine. In speaking of warming and ventilating hospitals of this class, Dr. Kirkbride maintains that a forced ventilation is the only kind always efficient and trustworthy. His views on this subject are well considered and mature. As proof of the extraordinary neglect and indifference with which this most

[1] See Amer. Journ. of Med. Sci. for Oct. 1872.

important matter is treated by builders, as well as the public, he points to the often-witnessed fact of edifices being half built before any plan is adopted to furnish air and warmth. Not a spadeful of earth should be turned till this vital provision is arranged to the minutest detail.

The constantly growing need of additional hospital accommodation is adverted to, and the duty and expediency of providing it is urged. The Doctor deals sturdy blows at cheap construction, so called. First cost, he says, may be low, without ultimate cheapness; and a heavy outlay at first may prove the best economy at last. For the insane, temporary structures possess no advantages, and are almost certain to be ill adapted to their needs. All increase in first outlay which tends to make the buildings really, as well as nominally permanent, is true economy. Wooden structures, or ones whose interior is largely composed of wood, are in danger of destruction by fire, and are constantly requiring expensive repair and renewal.

Dr. Kirkbride believes that our State will never find reason to regret the outlay made upon its substantial and well-fitted hospitals. First-class provision has been made so far, and it is to be earnestly hoped that no delusive promptings of a false economy will ever prevail upon her to erect structures of which her citizens shall have reason to be ashamed.

A memorial addressed to the last Legislature concerning the wants of the insane is here printed. The needs presented are: additional accommodation for the insane in general; special provision for insane convicts; and the continuance of the custom of allowing pay-patients to be received at low rates of board in the State hospitals, thereby bestowing the benefit of treatment without wounding self-respect, as we have elsewhere explained.

Asylum for the Relief of Persons deprived of the Use of their Reason, Frankford, Pa. Year ending March, 1874.—Much has been done during a few years past to keep this venerable institution abreast with its more modern companions. Both exterior and interior of the principal buildings have been rendered much more attractive by an additional top story, or Mansard roof, by complete repainting, and by enlarging and lowering the windows. New buildings have been erected for excited patients, and for purposes of amusement and recreation. The grounds, naturally beautiful, and possessing noble trees, have been much improved. These and other changes have done much to promote the curative work of the hospital, and to add to the enjoyment of its inmates.

From a population averaging eighty-four, only two deaths occurred in the year. No suicide has occurred within its walls in nearly twenty years. Dr. Worthington deprecates the popular disposition to look upon hospitals chiefly as places of confinement. They should rather be regarded as means for the restoration of health, and never as places of imprisonment or punishment.

In this modest asylum some eighteen hundred patients have been treated in all the years of its activity, which have been nearly three-score. Besides the large number relieved and made more comfortable, nearly eight hundred have been restored to health. Through the bounty of its founders, contributors, and benefactors, this good work has been done at charges to the patients much below the actual money-value of the board and care provided. Inasmuch, however, as the low rates are still beyond the unassisted means of some, $3000 from the income of permanent funds has been used in helping to pay the bills of forty-three patients during the past year. We cannot but think that if the usefulness and truly charitable character of such hospitals were generally understood, they would share much more largely than at present in the gifts of the wealthy and generous.

Butler Hospital for the Insane, Providence, R. I. Year ending December 31, 1874.—This, like the institutions under Dr. Kirkbride and Dr. Worthington, is purely corporate, and wholly unconnected with the State. Dr. Sawyer's space this year is completely occupied with the description of improvements finished or in progress. The new wing, contemplated at date of previous report, is already roofed in and provided with steam-heating apparatus. Connection has been made with the new municipal water-works, and the whole premises are lavishly supplied with a water of remarkable purity, at such a pressure as forces a stream through hydrant and hose seventy feet high in the air. This, added to previously existing safeguards of every known kind, renders conflagration almost impossible.

Through the wise beneficence of its trustees and other friends, this hospital has been constantly adding to its means and appliances for relieving and curing its patients. While furnishing a very high grade of accommodation to the wealthy, this institution affords care and treatment to the majority of its patients at rates below the average cost of mere maintenance. This, independent of interest on capital invested, amounts to $7.83 per week for each patient.

The new wing now in progress will add thirty beds, raising the capacity of the hospital, without crowding, up to one hundred and seventy or more.

Northern Ohio Hospital for the Insane, near Cleveland. Year ending November 15, 1874.—This hospital, like some near at hand, suffers from hordes of idle visitors, coming to be amused and excited. Dr. Slusser speaks sensibly and feelingly of the mortification caused to some patients, and the serious injury done to others, by the thoughtless crowds who trample through the wards, agape with vulgar wonder, and full of impertinent curiosity. The morbid taste which leads the general public to visit hospitals and view the insane in the same spirit in which they crowd around a cage of monkeys at a menagerie, ought surely not to be gratified. It is certainly the duty of a State to protect its afflicted citizens from such cruel humiliation and such grave injury.

King's County Lunatic Asylum. Year ending July 31, 1874.—Here, as in almost all similar institutions, we find complaint made of the crowded condition of the wards. Chances of recovery are diminished, the danger of accidents and assaults increased, and the general comfort of the house impaired by over-population. Converting day-rooms into dormitories is, as here stated, every way objectionable.

We are sorry to learn that Dr. Edward R. Chapin has resigned his superintendency. He has faithfully discharged the duties of this very responsible and laborious position for sixteen years.

State Lunatic Hospital of Pennsylvania, at Harrisburg. Year ending September 30, 1874.—The trustees and the superintendent unite in urging upon the public the duty of the State to provide hospital accommodations for all its insane. So long, however, as some must still remain in almshouses, the communities around them are asked to see to it that they are not neglected or ill-treated.

The trustees again refer to the unjust censures which they have received for admitting patients whose friends preferred to pay a low rate of board for them rather than incur the stigma of pauperism. People of humble means cannot afford to support their insane relatives in the corporate hospitals, like the one presided over by Dr. Kirkbride, for instance. To the State hospitals they have a right to look, and it is both justice and sound policy for the State to provide the needed treatment. To ignore the honourable sensitiveness of

families with limited means, by insisting that they shall enjoy hospital treatment only by becoming paupers, would be both extremely unwise and outrageously cruel. We hope the day will never come when the industrious, self-respecting working-man shall be refused the privilege of paying the lowest cost price for the maintenance of wife or child at the State hospital. The inevitable result would be the keeping of this class of the insane at home during the curable period, and at last throwing them upon the counties for support when all hope of cure was past.

Northern Hospital for the Insane, Oshkosh, Wisconsin. Year ending September 30, 1874.—The number of patients applying for admission to this new institution has proved much greater than was anticipated. Its completed wards are already badly crowded. Dr. Kempster takes the highest and soundest ground as to the necessity and the character of hospital accommodation. He believes it the duty and true policy of the State to make provision for all its insane, curable and incurable. He is not a believer in cottage systems, nor in cheap construction, but thinks that in hospitals as in other things the best is the cheapest.

Dr. Kempster directs attention to the sin and folly of marriage on the part of persons with insane tendencies. Little effect as warnings of this kind apparently have, we yet believe they should be oftener uttered in reports of this sort, since here they are most likely to reach those who need them—the relatives of the insane.

The fact is mentioned, with pardonable pride, that systematic work is here pursued with the scalpel, the microscope, and photo-micrography. By this sort of investigation it is that we are to make progress in the knowledge of brain-disease and its treatment. Dr. Kempster has been a pioneer in this important work, and deserves much credit.

State Lunatic Hospital, Northampton, Mass. Year ending September 30, 1874.—Dr. Earle has some extremely just remarks concerning the impropriety of receiving inebriates in hospitals for the insane. The influence exerted upon other patients by inmates of this class is very frequently decidedly injurious. As a rule, they foment discontent, and interfere with good discipline. Inebriate asylums are a great want of the age. Separate asylums for epileptics also are here advocated with much cogency.

In considering the great question how to provide for the rapidly increasing numbers of the insane, we think the doctor has fallen into some errors. He advises the building in different parts of the State of hospitals to accommodate two or three hundred patients. The objection to the comparative smallness of these establishments—their greater cost per patient—he boldly denies. He says that two great hospitals now building will cost $2000 to $2500 per head. And then he points to a group of buildings erected as an extension or addition to the original main establishment at Ovid, N. Y., and costing $500 for each patient. Allow, he says, $500 more for "such modifications of architecture and of internal arrangement, together with additional fixtures, furniture, and ornamentation" as would be required for a better or more varied class of patients; and he seriously presents this as a demonstration that small and fitting hospitals for the insane can be provided at $1000 for each inmate. Nothing is said about the cost of land, although a large farm is always deemed necessary to a hospital for the insane. No hint is given to his readers that the Ovid group had its land, its bakery, laundry, and administrative department already provided. Yet it does not appear that he had in mind the fact that these things would need to be included in his estimate for new, small hospitals. For he expressly indicates, in words above quoted, what the additional $500 is

for. And that it would all be needed as indicated seems certain, when we remember that the Ovid buildings are but little divided into separate rooms, are intended for the pauper insane alone, and receive only a selected class of the entire population of the hospital; while Dr. Earle's proposed establishments are to receive both pay patients and paupers, curable and incurable, quiet and noisy, destructive and peaceable, filthy and cleanly.

That on many accounts hospitals of the size recommended by Dr. Earle are preferable, there will be few to doubt. That they can be provided as cheaply —patient for patient, and accommodation equally good—as institutions of double capacity, is contrary to the belief of all best fitted to judge, except our author. To convert them to his views upon this matter, will require much better logic and much happier illustration than are here employed. B. L. R.

ART. XXXIV.—*Registration Reports.*

1. *Thirty-second Report to the Legislature of Massachusetts relating to the Registry and Return of Births, Marriages, and Deaths in the Commonwealth, for the year ending December* 31, 1873. Prepared under the direction of the SECRETARY OF THE COMMONWEALTH. With editorial remarks by F. W. DRAPER, M.D. 8vo. pp. ix., 80, clxi. Boston, 1875.
2. *Twenty-First Report upon Registration of Births, Marriages, and Deaths in the State of Rhode Island, for the year ending December* 31, 1873. Prepared under the direction of JOSHUA M. ADDEMAN, Secretary of State. By EDWARD T. CASWELL, M.D. 16mo. pp. viii., 104. Providence, 1875.
3. *Fifth Annual Report of the Secretary of State of the State of Michigan relating to the Registry and Return of Births, Marriages, and Deaths, for the year* 1871. 8vo. pp. xxv., 376. Lansing, 1874.
4. *Nineteenth Annual Report upon the Births, Marriages, and Deaths in the City of Providence, for the year* 1873. By EDWIN M. SNOW, M.D., Superintendent of Health and City Registrar. 8vo. pp. 68. Providence, 1874.
5. *Report of the Health Officer for the City and County of San Francisco, for the fiscal year ending June* 30, 1874. By HENRY GIBBONS, JR., M.D., Health Officer. 8vo. pp. 71. San Francisco, 1874.

1. THE first eighty pages of this well-arranged document are filled with summaries and remarks; the remainder consists wholly of extended tables. The latter, as usual, present the facts of birth, marriage, and death, under almost every conceivable aspect in which they can be profitably viewed.

The Secretary of the Commonwealth says no more than truth when he reminds us that the State of Massachusetts and the cause of sanitary science have met with a severe loss in the death of Dr. George Derby. As editor of these Reports, and as Secretary of the State Board of Health, his labours have been most faithful, honourable, and useful.

The record of births in different counties continues to show a much larger proportion in the active and thriving districts than in the quiet and unprogressive communities. From the latter it has long been notorious that the young men emigrate in large numbers, seeking a career in the centres of wealth and activity.

The proportion of male births to female is as 106.9 to 100. This is not far from the relation which has obtained for years past.

The percentage of children born of purely native parentage has been steadily diminishing. Here, as elsewhere, larger families of children are born to foreign than to native parents.

There appeared during this year a very startling increase in the number of illegitimate births. The figures are more than double the average for fifteen years. No cause for this sad state of things is apparent, unless we attribute it to the poverty, idleness, and suffering, produced among a large class of young women by the great depression in manufacturing business existing during this and the previous year.

Marriages, as would be inferred from our remarks as to births, are less frequent in the quiet and unprogressive counties than in those containing a bustling and growing population. The month of November exhibits the maximum, and March the minimum of marriages, classified as to months. The occurrence in the former month of the time-honoured New England festival of Thanksgiving has, undoubtedly, an influence in this matter, as perhaps has also the coming of the Lenten season in the latter. At all events, the relation has been the same for many years.

Of bridegrooms over threescore years and ten, there were fifty-one; of brides only two had reached that age. One man died at the age of seventy-five, having begotten children by three wives, respectively fourteen, seventeen and three. His third marriage occurred when he was seventy years old.

The death-rate is less than for 1872, though still above recent averages. Epidemic prevalence of smallpox and of scarlet fever is the cause of this excess. The third quarter of the year has nearly 31 per cent. of the whole number of deaths, the excess being due principally to the summer complaints of children. Children of foreign parentage die at a tender age in much larger proportion than those of natives, thereby to a great extent counter-balancing the original excess in their number.

It is strange to find, in Massachusetts, of all places, the term "typhus," and not "typhoid," as the generic name under which are reported all cases of continued fever.

The mortality from consumption seems to have been slowly diminishing through the last score of years. Diminishing humidity of climate is here conjectured to be the cause of the change. May not an exacter and earlier diagnosis, and more judicious treatment, with perhaps more frequent removal of patients to a milder climate, have fully as much influence?

We are glad to learn that the late Dr. Derby has been succeeded by his associate and fellow-labourer, Dr. F. W. Draper, in the work of preparing and editing this important work. It is well that duties so difficult and momentous have passed into able and experienced hands.

2. We are sorry to learn that even in Rhode Island, which we have been accustomed to look upon as the model State in regard to registration, the soul of the compiler is sometimes sore vexed by incomplete returns. Nevertheless we believe the facts contained in these reports are much more than usually exact.

The proportion of male children to female, during twenty years, is 105.6 to 100. The variation in the ratio from year to year is, however, exceedingly curious. In 1873 it was 108.6, and in 1872, 100.9 to 100. In 1865 it was 112.9 to 100. In single counties the diversity for different years is enormous—as in Washington, for 1865, 88.1 to 100, and for 1868, 136.5 to 100. Among coloured children born in 1873 the ratio was 111.7 males to 100 females.

The allotment of marriages to different months is much the same as in the city of Providence, and in Massachusetts. November stands at the head; a considerable falling off occurs in December, with partial recovery in January, while March witnesses fewer unions than any other month.

Returns of divorces indicate that adultery, as a cause of separation, is comparatively more common in the rural districts than in the city of Providence. In the latter, desertion, failure to provide, drunkenness, and cruelty are more prominent as causes of divorce.

Five mothers, during 1873, gave birth each to her seventeenth child. During 17 years even that achievement has been far surpassed, there having been from 2 to 4 children recorded as eighteenth, nineteenth, twentieth, twenty-first, and twenty-second.

The monthly mortality is least in June, and next comes November. August, this year, shows the highest death-rate. This latter, however, not unfrequently occurs in July. Among the quarters of the year the third always bears a bad pre-eminence.

The deaths by consumption during the year number 580. Of these 328 were female. This excess mostly occurs in early and middle life, nearly disappearing at last. From 15 to 20 years, we have males 19, females 32; 20 to 30 years, males 67, females 115; 30 to 40, 48 and 63; 40 to 50, 35 and 39; 50 to 60, 28 and 27; 60 to 70, 22 and 24; over 70, 15 and 18. Viewing the records for a period of years, there seems to be a slight diminution in the mortality by this disease.

Pneumonia is somewhat more fatal among men than among women.

Scarlatina shows an absolute mortality larger than ever before, though not so large in proportion to all causes and to population as it exhibited four or five times since 1855. The variation in the proportion has been very great, being from more than ten per cent. of all deaths down to one-half of one per cent. More than half the fifteen hundred deaths by this disease in ten years past were children under five.

3. From some introductory remarks in the Michigan Report we learn that there is reason to believe that the returns of births are so inadequate as to require the addition of sixty or seventy per cent. to make them represent the truth. This disgraceful state of things is attributed to a provision of law whereby the births are not enumerated until months after they occur. Those for January are returned sixteen, and those for December five months after the event. Naturally many are forgotten or lost sight of, and more in the remote than in the recent months.

Whatever defects are possessed by the existing law, we believe that provision to be a good one which places registration under the management of the State Health Board. Dr. H. B. Baker, Secretary of the Board and Superintendent of Vital Statistics, would seem to be a zealous and efficient officer, if we may judge by the extent and variety of the tables here given, and by the judicious remarks interspersed.

In the births reported, the ratio of sexes is 110.29 males to 100 females. Where both parents are natives, the ratio falls to 106.09 to 100; and with both parents foreign, it rises to 116.15 to 100.

The tables present the recorded births under an extraordinary variety of aspects. Some of them can scarcely be understood, except by the practical statistician. One very interesting exhibit, however, is made to show the ratio of sexes of children born in many different States and cities. Some attempt is made to ascertain the obscure laws which govern this ever-varying relation.

The number of children born to native parents is much less, in proportion to population of adult age, than the number born to foreign parents.

Notwithstanding their liability to suffer a year's imprisonment, the clergy and justices of Michigan have officiated at one hundred and fifty-nine illegal marriages during 1871. The spectacle of gospel ministers marrying children, in open violation of law, is not an improving one. We believe Dr. Baker's suggestion to be a wise one—to require for valid marriage as strict an observance of legal forms as is required for the conveyance of real estate. Let the permission to contract marriage be placed under the sole charge of a civil officer, and the contract be as carefully recorded as deeds are.

The returns of deaths suffer from the same unfortunate cause of imperfection which we noted as affecting the birth reports. The same delay in enumeration exists, produces similar results, and calls for similar correction. By comparing returns with those of the United States census, it is found that in the remotest month nearly one-half the deaths fail to be returned under the State law.

The deaths reported are arranged and viewed under the most varied lights. It is very much to be regretted that so much care and skill, and such immense labour had to be exercised upon returns so very imperfect. Still, a remark made by the compiler is perfectly true, that for many purposes and under many aspects partial returns may be almost as valuable as complete ones. Much greater care, however, must be taken to avoid false inferences where such imperfections exist.

If the legislators of Michigan do not at once amend their registration laws, they will show themselves culpably indifferent to a most important interest of the State, and most inappreciative of the zeal, energy, and ability of their Superintendent.

4. Few people, probably, have any adequate idea of the difficulty and delicacy of good statistical work. To prepare and use tables properly, to reject the plausible but really illogical inferences which figures so often suggest, to perceive and make allowance for disturbing causes, and to judge at a glance where lies an absolute error in the returns—all this requires intellectual gifts of no mean order, with the addition either of long experience or of special training. To one who knows just enough of statistics to be aware of their frequent abuse and misinterpretation, there is great satisfaction in finding upon a title page the name of a compiler on whose accuracy, discernment, and sound judgment absolute reliance may be placed. We have before us one of these rare and happy instances. Dr. Snow has made registration, and the use of its facts, and sanitary science, the almost exclusive labour and study of his life for many years. For zeal and discretion in promoting accurate registration, and for skill in presenting results, he probably stands second to no man living in this country. To his agency is due in great measure the high position taken by his State and City as leaders in the work of thorough registration.

We notice a considerable diversity in the proportion borne by male to female births in different years in Providence. For the year 1873 it was 108.83 to 100. For the last twenty years the average was 105.4 to 100. In 1860, 1864, 1871, and 1872 the usual proportion was inverted, standing for these years in their order as follows: Males to females, 96.4 to 100, 97.3 to 100, 95.6 to 100, and 95.7 to 100. Yet in 1861 the males were to females no less than 118.6 to 100, and in 1865 113.8 to 100. It will be noticed that both these periods follow years in which the usual order had been changed. Among the coloured population, although

in eighteen years births fell short of deaths, yet of the children born 118.8 were males to 100 females.

The number of births from foreign parentage is, in proportion to population, very much larger than the number born to native parents. Both births and marriages, however, indicate a steady increase in the intermarriage of natives with foreigners.

The women who became mothers in 1873 had an average of 3.2 children each. Extending the computation over nineteen years the average is 3.44. The total number of children which these mothers might be expected to bear is estimated at 3.92. In single instances women became mothers for the first time at the ages of 41, 42, and 43. One woman bore her second child at 47. In the ten years previous, instances of maternity to the number of twenty-seven occurred at 47 to 50—four at the latter age.

Of two instances of triplets, one was the first child-bed of a mother aged 25 years; in the other the mother was 30, and had borne seven children previously. Of the plurality births in nineteen years, 58 per cent. were of foreign and 9 per cent. of mixed parentage.

Marriages for the year, and for nineteen years, are most frequent in November and October, and least in March. A falling off in December is thought to be due to certain rules in the Romish Church. Lent is thought accountable for the dearth in March; and we believe "Thanksgiving" has something to do with the November excess.

A comparison is suggested by Dr. Snow between the marriages of nineteen years classified as to nativity, and the births for eighteen years classified according to nativity of parents. The result upon bringing the averages together is certainly very significant and striking:—

	American.	Foreign.	Mixed.
Marriages	56.14 p. c.	30.86 p. c.	12.96 p. c.
Births	40.42	49.33	10.25

This table exhibits with perfect clearness the relative fertility of marriage when contracted between natives, foreigners, and between persons of different blood. The unions of foreigners are largely the most prolific, while mixed marriages are less so than the former, but still more so than purely native matches. From one year to another the relative number of the three classes varies very considerably; but in each class the relation of births to marriages is constant in character.

The proportion of native marriages varies rather curiously from year to year, but, on the whole, has changed very little in the nineteen years. But, looking at the whole term of years, we perceive that foreign unions have diminished, and mixed increased, though with singular temporary interruptions and reversals of the rule.

The average age of all decedents during 1873 was 27.77 years; those of American parentage averaged 33.27, and of foreign 22.24. This discrepancy, at first rather startling, is undoubtedly largely due, as Dr. Snow suggests, to the greater proportion of young children in the foreign population. Less favourable hygienic conditions, however, also undoubtedly exist. The averages for eighteen years are a small fraction less than for 1873. A table formed by setting down the average age for successive periods, each beginning at 1856 and ending at each subsequent year in succession—as 1856 to 1857, 1856 to 1858, 1856 to 1859, etc.—exhibits a very gradual increase in the age of decedents. But the differences between different years are curiously great. In 1867 the average of all dying was 32.72 years. In 1866 and 1868 also, the

average of American parentage was as high as in 1867 (36.85 and 36.54), but a want of correspondingly increased longevity in the other decedents prevented the total average from quite reaching 31 years. In 1856 the grand average was only 21.42, and continued more or less depressed till 1862. In 1864 and 1865 it again sank to 25.83 and 26.11; after which it kept considerably above the 18 years total until 1873.

As a rule the greatest mortality in Providence occurs in the third quarter of the year. Severe winter epidemics of scarlatina, measles, croup, and pneumonia have twice in nineteen years broken this law. The second quarter has usually the least mortality.

In speaking of the proportion of male to female decedents, on page 28, we believe a slip of the pen or of types has for once escaped correction. We cannot make sense of the passage as it stands. The general fact is that female decedents exceed in number those of the other sex—therein corresponding to the respective population, though a little in excess this year.

The difference in mortality among the young children according to parentage is very strikingly exhibited in a table which shows the mortality at successive age-periods, not only in absolute numbers, but in the percentage which decedents of each age bear to the total mortality of their class. Thus, in one hundred native decedents, 30.39 are under five years of age; while in one hundred deaths of foreign decedents we find 43.05 under five years. In the smaller and most critical period of from one to two years of age, the disparity is much greater, being 5.22 to 11.55. At adult age we find both classes furnishing about the same proportion of the mortality. At the fifty-to-sixty period, however, we find the earlier relations of the classes reversed; for in a hundred native deaths we have 9.05, while a hundred other decedents furnish only 4.09 in that age-period. Both ratio and absolute numbers of deaths continue with singularly little alteration through the two succeeding decennial periods, the exact figures being 9.16 to 4.55, and 9.52 to 4.90. In the next decade, 80–90, the proportions are 4.64 and 1.98 for native and foreign classes respectively. So that we have more than thirty-three decedents over fifty years old, of native birth, in each hundred; while one hundred decedents of the foreign class have only sixteen above that age.

For a period of thirty-four years the proportion of deaths under five years of age has been, for the whole people, 39.05 per cent. The range in eighteen years has been from 29.59 in 1867, to 45.91 in 1856. During that period, children under five years have furnished, of the native class, 30.37 per cent., and of the foreign 45.43.

The mortality tables here given are very various, and admirably fitted to bring out and exhibit the most valuable and interesting relations. The summaries and remarks upon the more prominent diseases as causing death in this year and in the past, are also of great interest. Time and space, however, alike forbid further comment.

5. The San Francisco report contains, and indeed is principally made up of mortality tables. Apparently the births and marriages are not considered to be within the line of a health officer's duties, for they are not here mentioned. Of course we do not mean by this remark to reflect in any way upon the gentleman who makes the report. We presume that his duties have been prescribed by law, and have no reason to doubt that they have been faithfully performed. It would seem, however, more judicious to publish the three different branches of vital statistics together.

The death-rate of San Francisco is somewhat higher than usual, owing principally to epidemic prevalence of scarlatina. As thus increased it is exactly the same as that of Philadelphia for 1873, and therefore lower than that of most great cities.

Aside from scarlet fever, it is claimed that the city of San Francisco enjoys unusual exemption from zymotic diseases.

The Chinese population introduce into the statistics a large element of uncertainty and error. Even their number is not accurately known. Their deaths furnish a very large proportion of those reported as "unknown" in causation. The figures as obtained would seem to indicate a mortality much greater than that of the white population.

We are disposed, however, to believe that other elements of error and uncertainty enter into these statistics, besides the ignorance and reticence of an Asiatic people.

If the death-rate of this city is really, and not merely apparently, low, it must certainly be attributed to the beneficence of nature; for we read of whole districts poisoned by bad sewerage and other forms of filth.

One ward, whose whole character, situation, and circumstances are most unpromising in a hygienic point of view, is yet found to exhibit a surprisingly low death-rate. The idea is suggested whether possibly the fumes of sulphurous acid, from a certain manufactory, may not possibly have exerted a disinfectant influence, by destroying in the air the otherwise fertile germs of disease.

B. L. R.

ART. XXXV.—*Fifth Clinical Report of the Rotunda Lying-in Hospital*, for the year ending 5th November, 1873. By GEORGE JOHNSTON, M.D. Edin., M. R. C. S. L., Master of the Hospital. Dublin, 1874.

Sixth Clinical Report of the Rotunda Lying-in Hospital, for the year ending Nov. 5, 1874. By GEORGE JOHNSTON, M.D. Edin. Dublin, 1875.

IN the report for 1873, after showing the care with which his statement has been prepared, so as to make it unquestionably accurate, Dr. Johnston expresses his thanks that no epidemic had visited the institution during the year, although many such had existed in the city. This he attributes to improved ventilation obtained as follows:—

"The upper sash of a window in each ward being kept constantly open to the extent of six inches, to the doing away with the old-fashioned canopies and curtains of beds; the insisting on the immediate removal of all excreta from the wards; the thorough cleanliness of the patients and their surroundings; the regular attendance on them night and morning; supporting their strength with nutritious animal diet, such as chicken broth, beef-tea, etc., judiciously given from the commencement; and not allowing labour to proceed until febrile symptoms appear, but by timely interference relieving the patients from an amount of suffering and exhaustion, and consequent danger, to which they otherwise would be liable."

The general summary for the year is as follows:—

Patients confined in the hospital	1191
" " at their own homes	77
" under treatment in the wards for uterine diseases	286
" prescribed for at the dispensary	2814
Total number of cases	4368

Of the 1191 patients confined in the hospital, 934 were cephalic cases delivered by natural efforts within twenty-four hours. In 39 the labour exceeded this period; 15 gave birth to twins; 1 to triplets; 44 aborted, *i. e.* within six months, two being hydatids; 5 children presented by the upper extremity, and 35 the lower; 142 were delivered with forceps. In 6 the perforator was used, after there was evidence of fœtal death. Version in 16 cases. Labour induced in 2 cases of pelvic deformity; 10 admitted with accidental hemorrhage; 3 with placenta prævia; 10 cases of *post-partum* hemorrhage, one of which required injection of perchloride of iron; 13 cases of retained placenta; 10 of prolapsed funis; 4 cases of convulsions; 5 patients were epileptic; apoplexy occurred in 2 instances, and mania in 8.

State on Admission.—1, phlebitis from inflamed varicose veins; 6, typhoid fever; 2, gastritis; 25, bronchitis; 12, laryngitis; 1, pleuritis; 3, pneumonia; 4, phthisis; 1, disease of mitral valve; 1, renal disease; 3, ulceration of vagina; 1, ecchymosis of labia and perineum; 1, purpura; 1, rubeola; and 8 cases of syphilis; 35 of the women were labouring more or less under distress of mind; being cases of seduction; recently widowed; desertion; maltreatment, etc.

"Surely when such cases as these are taken into account, the hospital should not be charged with being the cause of their death, should it occur, as the same result would, in all probability, have taken place had they been confined elsewhere. And here I can confidently say, that after five years' experience, and close watching of 5791 cases, in no one instance could a death be attributed to their labour having taken place in the hospital." (p. 6.)

This is very strong testimony; going to show what can be done in an old hospital with proper care, in which at one time such results would have been thought impossible.

A large portion of the report is taken up with detailed statements upon the several heads already mentioned. We shall only refer to a few of them.

Triplets.—Eleventh confinement: girl, 6 pounds 4 ounces; boy, 5 pounds 8 ounces; girl, 4 pounds 8 ounces. Two placentæ united, and one distinct. Mother left with the three, on the 17th day.

Forceps Cases.—Of the 142, 104 were primiparæ, 65 of whom were delivered of male, and 39 of female children. 60 males were born alive, and 56 lived; all the female children lived. Of the 38 pluriparæ, 22 had male children, and 16, female. 19 of the former, and all of the latter were delivered alive. 2 males, 1 female subsequently died.

Results in Forceps Cases.—132 recovered; 1 pluripara, and 9 primiparæ died: 2 from peritonitis, 1 being a case of seduction, and the other anæmia; 2 of pyæmia, 1 being a case of seduction and the other great delay in first stage from size of fœtus; 4 died of convulsions, 1 having albuminuria, and 1 embolism of right pulmonary artery with disease of kidneys and ovaries; 1 died of gastritis with which she was admitted; and 1 of laryngeal phthisis.

Craniotomy.—6 cases, 4 primiparæ, 2 pluriparæ. All recovered but one of the latter, who died in thirty-eight hours from shock.

Version.—16 cases, 3 primiparæ, 13 pluriparæ; 14 recovered, and 2 of the latter died, one of pneumonia twenty-two days after delivery, and the other of acute bronchitis on fourth day, having had the disease two weeks before admission. 12 children were born alive, 6 of each sex, of whom 2 males and 3 females died.

Post-partum hemorrhage not favoured by a short second stage, for of 686 cases where this stage was within an hour, there were but 4 of *post-partum* hemorrhage, out of the 10 cases that occurred in the whole; 3 were slight, and 1 required injection of solution of perchloride of iron.

Prolapsus of Funis.—10 cases, mothers recovered, 3 children saved.

1060 of the 1191 placentæ were delivered within fifteen minutes.

Deaths from all cases, 32, or 1 in 37¼, 17 being accidental and 15 zymotic.

Causes of Death.—1, mental distress from seduction; 4, phthisis; 1, gastritis of some months' duration; 2, pneumonia, with which they were admitted; 1, syncope after violent passion on fourth day; 1, acute bronchitis contracted before entrance; 1, shock after craniotomy; 1, apoplexy; 1, heart disease; 1, Bright's disease; 3, convulsions; and 1, laryngitis.

The zymotic cases were, puerperal fever, 1; peritonitis, 7; pyæmia, 4; enteritis, 1; phlebitis, 1; and uterine diphtherite, 1.

"Deaths from zymotic diseases, to a great extent, have taken place in the various parts of the city, during the year; and although the patients delivered came from the various infected localities, and in some instances, even from among their families, where members were laid down with sickness, still they did not convey the malady to any of the other patients in the ward; thus showing that epidemics may prevail outside, and still the hospital be perfectly free from them." (p. 28.)

Having visited this institution at a period when its mortality was far greater than at present, we are glad to be able to report the benefit of an improved system of management in its wards and cases.

The report for 1874 presents the following general summary:—

Patients confined in the hospital	1236
" " at their own homes	153
" under treatment in the wards for female complaints . .	254
" prescribed for at the dispensary, one-half of which were treated for diseases of the womb in the gynæcological department	4927
Total number of cases	6570

Of the 1236 delivered in the hospital, 997 were cephalic cases, terminating by natural efforts within twenty-four hours. In 40 the labour exceeded this period, the majority of which had been under care of practitioners or midwives before being sent to the hospital; 24 gave birth to twins. In 45 the ovum was expelled within the sixth month of gestation; the forceps were used in 138 cases; perforator not used. Version in 14 cases; 7 admitted with accidental hemorrhage; 6 with placenta prævia; 25 cases of post-partem hemorrhage, mostly trivial; 7 cases of retained placenta; 13 of prolapsed funis; 5 of convulsions; 2 epileptic; and 5 of mania, 1 of which died of apoplexy.

Mortality.—There were 15 deaths from all causes, against 32 in the previous year, or 1 in 82¼. Of these, 10 were zymotic, viz., 3 scarlatina, 4 peritonitis, 1 pyæmia, 1 typhus, and 1 typhoid fever.

Scarlatina.—Ages 22, 26, 31.—In first, rash appeared in 39 hours after confinement; in second, immediately; and in third, in 51 hours. Death in first, on third day of attack; in the second, peritonitis occurred on third day, and death from it on the eleventh; and the third died in 48 hours from the disease, as in the first, without abdominal or uterine complication. There were 15 cases of scarlatina admitted, in all of whom the disease appeared on or before the third day, and there were no other cases of disease traceable to them.

Besides the 10 zymotic cases resulting in death, there was 1 death from apoplexy, 1 placenta prævia, 1 bronchitis, 1 sloughing, and 1 fatty degeneration of kidneys, liver, and heart.

Premature births 51; 31 in seventh, and 20 in eighth month. Of the seventh

month cases, all the mothers recovered but one, who died of hepatic and renal disease; 17 children were born alive, and but 3 girls and 1 boy lived. Of the eighth month cases, all the mothers recovered; 15 children born alive; 2 boys and 7 girls lived.

Forceps cases 138; 105 were primiparæ, 5 of whom died. The 33 pluriparæ all recovered. The deaths were one each of apoplexy, scarlatina, bronchitis, sloughing of vagina with peritonitis, and peritonitis. Children delivered alive 128, saved 119.

Degree of dilatation of the os uteri at the time of operation.—Four inches being assumed to be the measure of full dilatation, four-fifths will be 3⅕ inches; three-fifths, 2⅖ inches; and two-fifths, 1⅗ inches. 24 cases were operated upon at ⅘ dilatation, 19 being primiparæ; 18 primiparous children lived, and 4 pluriparous; 2 primiparous women died. 12 cases were operated upon at ⅗ dilatation, 11 being primiparous. 10 primiparous children lived; the other two were still-born—mothers recovered.

Craniotomy not performed in fifteen months; attributed to the adoption of the double-curved forceps in place of those with straight blades.

Version.—14 cases, all primiparous; one mother died of hemorrhage, with laceration of vagina and cervix.

Placenta Prævia.—5 cases pluriparæ; 4 mothers and 3 children saved; 4 by version; 1, forceps.

Prolapse of Funis.—12 cases; all mothers recovered; 5 children saved.

Dr. Johnson uses the forceps once on an average in ten deliveries, and certainly has met with marked success in the results of his treatment. This frequency is condemned by some of his colleagues as a dangerous example for less skilful practitioners to follow. There have been instances here and in Ireland, where wonderful results were attained in private practice covering a number of years, by obstetricians who resorted to the instrument still more frequently than this, and even as much as one in seven. R. P. H.

ART. XXXVI.—*Experimentation on Animals as a Means of Knowledge in Physiology, Pathology, and Practical Medicine.* By J. C. DALTON, M.D., Professor of Physiology in the College of Physicians and Surgeons, New York. 12mo. pp. 69. New York: F. W. Christern, 1875.

DR. DALTON'S little volume is a brief argument to the laity in regard to the subject of the use of animals for scientific investigations. He deals first with its character, and, defining cruelty, goes on to show just what amount of pain is given in the laboratory, and how far it has been over-stated. In so doing he should, we think, have discriminated as to his antagonists, some of whom would permit the use of animals to certain persons under certain general restrictions, while the greater number would deny to us all such aid. Perhaps Dr. Dalton's book may reach and touch the outside jury of the great public, but no one within the ring of philo-canines will be made by it to think that even for a man a dog should die or suffer.

In Chapter II.—The necessity of such experimentation is very neatly put. It might have been made stronger by the single case of a new medicine such as chloral. A physician suspects it to have power to give sleep. How shall he test it? On a patient—hardly. It may be a deadly poison. On a dog, of

course; and naturally on one already condemned to die. Let him ask in Philadelphia for such a one, and he will be told that the ladies reserve to themselves the pleasure of feeling sure that in dying the dog shall not benefit man. From this case there is no escape. If it were impossible to have tested on dogs the power of chloral, humanity might long have waited for this precious gift from science to the healing art.

In Chapter III.—The results of the use of animals are treated of, and what we have learned by it in regard to circulation, respiration, etc., is told in the clear, concise style which Dr. Dalton so well knows how to use. Lastly, Dr. D. gives the resolutions of New York societies and the opinions of men of eminence as to the use of animals in the laboratory. We learn here most distinctly that now again, in New York, an effort is being made to render unlawful the use of animals in experiment. Once before this was tried and failed. Once in Pennsylvania it was talked of, but went no further. We need not fear that it will elsewhere; but should it do so, it would not check men of science in using animals. It would but create a new crime—in law—and men would accept the weight of legal sin as they did when to dissect man's body was illegal.

S. W. M.

ART. XXXVII.—*Outlines of the Science and Practice of Medicine.* By WM. AITKEN, M.D., F.R.S., Professor of Pathology in the Army Medical School. 12mo. pp. xx., 593. London: Charles Griffin & Co. Philadelphia: J. B. Lippincott & Co., 1874.

DR. AITKEN is the author of a systematic treatise on "*The Science and Practice of Medicine*," which has reached a sixth edition, and is deservedly popular as a text-book, with the profession. We are therefore at a loss to conceive what could have induced him to publish a book which, as he avows in the preface, is intended "to furnish such a digest of the science and practice of medicine as may be an aid to the memory, and a help to the student in preparing for examinations;" since works of this class very rarely emanate from successful teachers. We doubt, moreover, whether students who habitually have recourse to them ever become distinguished physicians. In fact its deficiencies appear to be clear to the author himself, for he is constantly referring in it to his larger work.

We have spoken in condemnation of the class to which this book belongs, but we must in candor add that the amount of valuable knowledge which Dr. Aitken has been able to crowd into its pages has surprised us; many conditions being treated of which fall in this country to the care of the surgeon. Among these may be mentioned diseases of the eye, and the primary lesions of syphilis. We need scarcely say, in conclusion, that the book is, as far as it goes, thoroughly representative of the present condition of medical science.

J. H. H.

ART. XXXVIII.—*Dental Pathology and Surgery.* By S. JAMES A. SALTER, M.B., F.R.S., Member of the Royal College of Surgeons, and Examiner in Dental Surgery at the College; Dental Surgeon to Guy's Hospital. 8vo. pp. xx., 399. New York: William Wood & Co., 1875.

AN author who, for twenty-three years, has honourably devoted himself to the science of this specialty, Dental Surgery, could not well attempt a work of

this character without adding to the store of knowledge and exciting interest in a subject that is as yet but imperfectly understood. When it is remembered that he has during a long time enjoyed the opportunities afforded by his connection with Guy's Hospital, it may also be said that he should be eminently qualified to enter upon the description of the "debatable ground between that occupied by the surgeon and by the dentist." This was evident from his being "solicited to contribute the article on" "Surgical Diseases connected with the Teeth," in the System of Surgery edited by Mr. Holmes, and his papers published by the Royal Medical and Chirurgical Society, the Pathological Society, and in the Guy's Hospital Reports, Archives of Dentistry, and Dental Journal.

The present volume, he states, "is a digested collection of all my previous essays and papers," with additions "to previously published matter." While he acknowledges that subjects belonging to his specialty have been omitted, he claims "only to express views and to record observations where I could do so with authority."

The limit of this notice compels the omission of much that to the specialist is most worthy of study, and the manner of presenting the interesting experience of years of practice, can be afforded only a passing notice—at the same time it must strike the reader with regret that there is such a general failure to mention some of the ablest writers upon this side of the water, and singularly enough to awaken a passing comment through the whole body of his work, he refers to only six American authors, and here even in a most apologetic or superficial manner, in two instances such references being to men who long since have been gathered with the past.

After an able chapter, with the exception of some omissions referred to, upon the "General Anatomy of the Teeth and Contiguous Structures," a most interesting one, probably the best in the whole book, on their functions follows, which might be most profitably studied by the physiologist, opening a large field for the comparison of the relationship between the formation of the mouths of different races of men with their languages or dialects.

In succeeding chapters he treats of supernumerary, third sets, deficiencies, irregularities, and united teeth.

In his remarks upon the V-shaped or rabbit mouth, he states that "Dr. Langdon Down has pointed out that it is very frequently concurrent with congenital idiocy. It must be observed, however, that this form of jaw is often seen in persons of the highest intellectual capacity." Here the author might have expressed himself more definitely, and by reference to a report of examinations of the mouths of the inmates of the Pennsylvania Training School for Feeble Minded Children, made by Dr. Jas. W. White,[1] he would be able to demonstrate that this peculiar deformity is by no means diagnostic of mental defects; for, this occurs more rarely in such unfortunates than in the most highly gifted offspring.

The above conclusion has been strengthened, if not verified, by an extended series of observations by Drs. N. W. Kingsley, of New York, C. N. Pierce, J. H. McQuillen, and Stellwagen, of Philadelphia.[2]

Next, secondary dentine, congenital defects of structure and form, caries, abscess and staining of dentine, mechanical injuries, tumours, and diseases of the pulps of teeth are treated of.

To the above succeeds a chapter on epulis—that, until recently, much con-

[1] See Dental Cosmos, April, 1872, p. 205.

[2] See Transactions of the New York Odontological Society, Dec. 1874.

fusing nomenclature of a common disease, in which he seems to have partially understood the objection to the word, but not to have adopted the remedy of an American author, and used the term epulis "as an adjectival noun."[1]

He speaks of it as always associated with porous, vascular bone, nearly connected with the *periodontal* membrane (it here may occur that the word peridental avoids the combination of a Latin with a Greek root). After advancing the opinion that extraction of the teeth adjoining the tumour often effects a cure, he describes the operation by excision of a V-shaped or cubical mass of the bone upon which the growth is supported, but very properly objects to the removal of a segment of the inferior maxilla, as interfering unnecessarily with the function of the remaining portions, and their contained or supported teeth.

He seems to have overlooked the value of continued pressure for causing the absorption of an incipient epulic polypus.

Then follows an account of cases of impaction of permanent teeth, showing how a mistake in the diagnosis of a comparatively simple difficulty may be made by learned physicians, a matter though rather of wonder that it so seldom does occur.

In the treatment of dentigerous cysts, he speaks of scalpel, bone-nippers, saw and extracting forceps, omitting to mention those invaluable instruments—the chisel and gouge—with which, in this country, our surgeons perform some of the most extensive resections of the jaws through the open mouth, thus avoiding the disfigurement so often resulting from cutting the integuments of the face.

The American dentist will be much astonished at the want of attention given to alveolar abscess, which is, to say the best of it, lacking in some very important features of the usually successful means daily employed by them to save and render useful organs that have been attacked. Indeed, so much possibly has been assumed to be known by the reader, that any one unfamiliar with the treatment, would be led to such erroneous conclusions that the omission of the entire chapter would relieve the book of an unfortunate feature. The same may be said of the succeeding chapter on Abscess of the Antrum, where, in addition to the absence of anything new in the management of the malady, he seems to advise the extraction of teeth as if they were corns or warts, expressing himself that if even a canine tooth (which all know is one of the most useful, lasting, and important teeth) is the cause it should be removed without adding any qualification as to the probability of successful treatment and course to be adopted for its retention; neither does he notice the very general plan of opening from the vestibule of the mouth through the external plate of the maxilla, above the roots of the teeth. Such neglect of the common operation, at least on this side of the Atlantic, can only be accounted for upon the supposition that his reading of our literature and journals must have been exceedingly limited, as has already been hinted at in the opening remarks of this notice.

The author's presentation of the "Affections of the Nervous System dependent on Diseases of the Teeth," is a systematic step into the study of some of the most astonishing phenomena connected with diseases of the fifth pair of nerves. This subject will bear elaborating, but he has rendered invaluable service by clinical reports, which, as yet, are comparatively rare and scattered. To some fifteen cases of others he has added about eight wherein he was either in consultation or charge.

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[1] See "Anomalous Tumours," by Jas. E. Garretson, M.D., *Medical and Surgical Reporter*, New Series, vol. vi. No. 12.

Phosphorous disease receives considerable attention, and to one who may be called upon to take charge of a patient afflicted with this loathsome, tedious, and dangerous affection, may be truly worth the cost of the entire work.

The hypertrophy of the secondary bony tissue of the replaced jaw that is sometimes found, however, does not seem to have come under notice, but rather the atrophied condition that is perhaps more frequently met with. The use of carbonate of magnesia to neutralize the acid condition of the secretions is likewise omitted,[1] as well as the capping of teeth, as practised by the dentist with gutta percha, to prevent increase of irritation by their occlusion,[1] and the danger of attempting the removal of the sequestrum before complete detachment, is allowed to be inferred upon general principles rather than urged upon the attention of the surgeon, as Garretson and Billroth[2] both have seen fit to do.

Necrosis and exfoliation of the alveolar process he very justly thinks is more frequently the effect of the disease itself, rather than of the drugs used in treatment. This opinion he has based upon observation of a number of cases where it was "one of the secondary consequences resulting from attacks of the eruptive fevers—scarlet fever, measles, and smallpox. These cases have been so singularly uniform in their origin, course, and entire history, that though following different forms of eruptive disease, they would seem to have a generic identity:"

"After scarlet fever I have now seen fifteen or sixteen cases; after measles about five or six, and after smallpox four."

This is the result of fifteen years' experience "combining private practice with the large population of poor who seek assistance at Guy's Hospital," so that it does not seem to be a very frequent occurrence. It may, however, result after a mild attack of scarlatina, and is generally discovered by the attendant's attention being arrested by the fetor of the patient's breath. Examination shows that the gum about some of the teeth is stripped from the bone and the free margin of the mucous membrane, red and tumid with pus oozing from the inside. There is no thickening of or effort to form new bone, nor are there fistulæ or sinuses.

The condition grows worse for six or eight weeks, at the end of which time the sequestrum is generally detached, and the place heals rapidly.

The disease is symmetrical, and although it may be met with in both jaws of the same patient, causing the loss of four pieces of alveolar process, it is most frequently confined to one jaw.

The difficulty is generally met with in four or five weeks after an attack of the eruptive fever, but never after eight or nine weeks, and there is rarely any swelling or pain, nor is there any comparison between the amount of exfoliation and severity of the fever, and it "generally occurred in very healthy children."

The necrosis is always confined to the jaws in these cases—to the bones, that is, which encompass the young teeth; the rest of the skeleton escapes.[3]

"It happens during the time that the most active tooth development is going

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[1] See System of Oral Surgery, by Jas. E. Garretson, M.D. Phila. 1874, pp. 586, 593.

[2] General Surgical Pathology and Therapeutics, by Dr. Theodore Billroth. New York, 1872, p. 448.

[3] In the museum of the Philadelphia Dental College there is the right side of the inferior maxilla of a child including ramus, condyle, and teeth, supposed to be a sequel of measles. See description in Garretson's System of Oral Surgery, p. 581.

on . . . . . about five or six years of age. From three to eight are the extreme limits I have seen." Mr. Salter accounts for this peculiar kind of necrosis by reference to the very generally received opinion that as teeth are "members of the dermal system, ... they would share the consequences which attend those particular diseases which spend their chief force on the skin."[1] He asserts his "belief that the particular form of alveolar necrosis here described is one of the *specific sequelæ* of the eruptive fevers."

Chapter XXIII. gives the account of two cases that are claimed to be syphilitic alveolar periostitis. The succeeding one, on extracting teeth, is, like most of those where the author attempts to handle subjects belonging exclusively to dentistry, erroneous and defective to a lamentable degree.

"Cleft and Perforate Palate," the final theme of our author, is rather open to the charge of special pleading of which he accuses those who object to staphyloraphy. He says: "In stating the comparative advantages of surgical and mechanical treatment, this dependence on the mechanist has never been sufficiently appreciated, as it seems to me, by those who espouse the palliative and supplemental help of the dentist . . . . . if an accident befall his artificial mouth he is helpless and practically dumb, till the artificer again makes good his mouth deficiencies." If staphyloraphy relieved one entirely from danger of accidentally severing the cicatrix, or if the operation could be performed as readily as reduction of dislocated inferior maxilla, his case would be stronger; but what is to be done in those distressing cases wherein only a few years ago no operations or artificial palate could offer relief? He criticizes a well-known American improvement: "Mr. Kingsley's arrangement may be very comfortable and very firm, as is the case with Paré's Obturator. As regards the latter, there has been abundant time and opportunity to appreciate and realize its ultimate evil consequences; Mr. Kingsley's apparatus has hardly yet been sufficiently long in use to declare its real effect upon the parts of a defective palate." It would almost seem to be as good an indorsement of this most excellent contrivance as he could give—namely, the only objection that he can find to it after it has been for years in use is a purely theoretical one. In exchange for this American contrivance he offers one which seems to have little to recommend it save that it is the production of his friend Mr. George Parkinson.

T. C. S.

ART. XXXIX.—*Anleitung zur Klinischen Untersuchung und Diagnose. Ein Leitfaden für Angehende Kliniker.* Von Dr. Med. RICHARD HAGEN, Privatdocent an der Universität in Leipzig. Zweite umgearbeitete, verbesserte und vermehite Auflage. 12mo. pp. xvi., 173. Leipsig. Verlag von Veit & Comp., 1874.

Directions for the Clinical Study and Diagnosis of Disease. A Guide for young Clinicians. By RICHARD HAGEN, M.D., Lecturer at the University of Leipsic. Second Edition, revised and improved.

THE systematic treatises on pathology often fail to convey to students a kind of information, which no physician can well be without who aspires to distinction as a diagnostician, and it is just this want that the little book before us is

[1] "John Hunter declared that the alveolar processes of both jaws should rather be considered as belonging to the teeth than as parts of the jaws."—*Studies in the Facial Region*, by Harrison Allen, M.D. Philadelphia, 1875. pp. 44.

intended to supply. Any one who will take the trouble to render himself thoroughly familiar with its contents, will, we are sure, not only acquire a knowledge of what he ought to observe at the bedside, but will also learn what estimate to put upon the different symptoms and how to interpret them. In plan it does not differ materially from a work by Dr. Octavius Sturges, entitled "*An Introduction to the Study of Clinical Medicine*, etc." which was noticed in the October Number of this Journal for 1873.

The first half of the book is devoted to the discussion of general subjects, such as the definition of disease and of symptoms; the manner in which a physician should conduct an examination of a patient; the physical methods of diagnosis; the examination of the urine and other secretions; directions for obtaining the history of patients; etc. In the latter half diseases are grouped together which affect the same part of the body, and which, having many symptoms in common, are not always readily distinguished from one another. To enable the student to do this readily is the object which the author has sought to attain.

The book is an excellent one of its class, and one which, were the market not already stocked with this kind of material, it might be well to translate into English. J. H. H.

ART. XL.—*Commentarii di Medicina e Chirurgia publicati da professori dell' Universita' e da Medici dell' Ospitale di Pavia*, per cura del prof. A. DE-GIOVANNI pella parte medica, e del prof. A. SCARENZIO pella parte chirurgica. Novembre, Decembre. Anno 1. Milano, 1874.

Commentaries of Medicine and Surgery, published by the Professors of the University and Physicians of the Hospital of Pavia. The Medical Parts under the direction of Prof. A. DE-GIOVANNI, and the Surgical under that of Prof. A. SCARENZIO. November and December, 1874. 1st year. Milan: A. Giuliani & Co.

THIS is the third number of the above-named journal, and bids fairly to become one of the most prominent of the medical periodicals of Italy. It is in octavo form, is published every two months, and will make a volume of about 500 pages at the end of the year. Like the journals of Italy generally the paper is inferior, and the letter-press and illustrations are of the same character. In the style of issuing medical books Italy is much behind many other parts of Europe.

In this number there are three original articles, viz.: Clinical remarks upon deforming endoarteritis; second, and concluding part, with reports of ten cases, by Dr. De-Giovanni. . . . Lecture of Dr. Arigo Salvatore upon obstructed circulation of the interior of the intestine, and strangulation of this viscus; delivered before the autumnal session of the Medical Council of the Maggiore Hospital of Lodi, with reports of fifteen cases. . . . And Laryngoscopic Operations, by Dr. Carlo Labus, specialist for diseases of the throat in Milan.

The last article is accompanied by eleven laryngoscopic illustrations, showing polypi and other more serious growths which the author had removed from the vocal cords, with notes of the cases in question.

The use of the laryngoscope has made the reports of such cases as numerous as they were rare before its discovery. The late Dr. Horace Green, of New York, whose office was every day crowded with cases of throat disease, and who died before the instrument was fairly introduced, told the reviewer after

having had a very large experience, that he had never found but four cases of polypus of the larynx, only one of which he had been able to see and remove.

Under the head of Short Articles ("*Piccole Communicazioni*") are, 1st. A case of secondary amputation of all the metatarsal bones of both feet for gangrenous frost-bite, a periosteal flap being preserved to cover the stump of each bone, by Dr. Francisco Parona. Cure. . . . 2d. Uterine Polypus removed by means of an elastic ligature, by Prof. Angelo Scarenzo. . . . 3d. Capillary puncture of the bladder, by Dr. Carlo Bossi. . . . 4th. Left Hemiplegia—cerebral hemorrhage on the left side, by Luigi Mangiagalli. . . . And, 5th. Cancer of Mesentery. R. P. H.

ART. XLI.—*Contributions to the Annals of Medical Progress and Medical Education in the United States, before and during the War of Independence.* By JOSEPH M. TONER, M.D. 16mo. pp. 118. Washington: Government Printing Office, 1874.

PREPARED as it was in the intervals of other occupations, and modest as are its claims, this little brochure must have required great labour and wide research. It contains the names of six or eight hundred medical men who lived and practised in Colonial and Revolutionary times. These are generally grouped together under the heading of the province in which they lived, or in connection with the chief movements with which their memories are associated. The biographic notes are extremely brief, limited often to a line or two.

Sketches are given of the earliest legislation, in the different colonies, for the benefit or regulation of the profession. The foundation of the earlier hospitals and medical societies; the educational requirements for medical practice, and the movements towards providing professional education at home; the infrequency of autopsies, and the opposition to dissection; the occurrence of notable epidemics—these are a few of the many matters glanced at in this rapid survey.

To the founders of our Pennsylvania Hospital Dr. Toner ascribes the credit of first instituting, in this country, clinical instruction, and a public medical library.

A fee-bill, here printed, established by the Virginia Legislature in 1736, allows five shillings a visit for town practice. The interest attaching to this bill would have been much greater had we been informed as to the purchasing value of the Virginia shilling at that period. The country physician, we are told, had trouble to collect any fees. He was often obliged to take pay in produce; and he usually united the calling of a farmer to that of a doctor.

It was not unusual for young men, pursuing their preparation for the ministry in the universities of the mother country, to add to their studies that of physic. They were thus better prepared for usefulness in a new and thinly settled land.

Those physicians who were established in practice took apprentices, and conveyed to them as best they could the mysteries of their art. Female physicians were not unknown. Indeed, the doctor tells us that the first person executed in the Massachusetts Bay Colony, was one of these. She was charged with witchcraft, because of unnatural potency of simple drugs in her practice, and the baneful results of her unfavourable prognoses.

Widows of physicians, in many cases, carried on the practice of midwifery perforce abandoned by their lords. B. L. R.

ART. XLII.—*Croup in its Relations to Tracheotomy.* By J. SOLIS COHEN, M.D., Lecturer on Laryngoscopy and Diseases of the Throat and Chest, in Jefferson Med. Coll. 8vo. pp. 78. Philadelphia: Lindsay and Blakiston, 1874.

THE subject of tracheotomy for the relief of croup has been a mooted point since its first introduction, and when the ill success which attended its practice for so many years is remembered, it is almost a matter of wonder that it has survived; but, like ovariotomy and some other operations, it furnishes an illustration of the proper application of a Darwinian theory, as by its fitness it has secured its existence. In surveying the progress of surgery, even in the last twenty years, no one can fail to observe how numerous are the operations, which, raised from the limbo of hare-brained attempts, have been established as wise and praiseworthy efforts to alleviate human misery, until even the ligation of the innominate artery has been crowned with success. In artificially opening the air passages to avert suffocation from croupous exudation, may be found another instance of the power of that method of reasoning in which a generalization has preceded the observed facts, although it has only been with the accumulation of accurately observed facts that the propriety of the practice has been demonstrated. Indeed, the study of this book shows how idealism and induction, the Platonic and Aristotelian, or, according to Tyndall, Democritian systems may work in harmony to bring forth one result. For many years the advocates of the operation now under consideration had to depend largely upon theory for their support, while it was left for Trousseau, Guersant, and men of the present day to show what steps were necessary to command reasonable success.

Dr. Cohen's book is especially rich in statistical tables which scarcely admit of analysis. It is noticeable that few cases of croup in which tracheotomy is done, recover when the patient is less than two, or over nine years of age, though more recover in the former than in the latter class. Croup following any of the exanthemata is not suited for operation, yet three successes after measles, and one after scarlatina are recorded, and in view of the depraved state of blood which commonly exists in these cases, the result can cause no surprise. Dr. Cohen treats largely of the indications for the operation, but the subject is too extensive and well known to be more than summarized here. A resort to the operation, even in extremis, is advocated, as giving the patient a chance, though it be but a slim one. The blue colour of the lips, and depression of the thoracic parietes, upon inspiration furnish the most trustworthy indications that surgical interference should be no longer delayed, as it seems pretty well settled that the postponement of the operation until a very late date, or until the patient is in articulo mortis, has contributed largely to the great mortality of which the early history of this proceeding is a record.

Dr. Cohen favours the administration of an anæsthetic, for though some oppose it, the weight of authorities advocate such a course, as aiding the careful and deliberate performance of the operation, which, because it is one of emergency is too often hurried and the hemorrhage not arrested, as it should be, when it occurs. The incision should be as near the cricoid cartilage as possible, and a piece of a tracheal ring should be excised if there is any difficulty experienced in the introduction of the tube. When this difficulty does exist, Guersant's dilator is often of service, or, should this instrument not be at hand, a gum catheter passed through the tube so as to project beyond its extremity, forms an admirable guide in this often perplexing step of the operation.

In discussing the after-treatment, Dr. Cohen refers with strong commendation,

to the work of M. Saurré, which contains an analysis of six hundred and sixty-two cases, and acknowledges his indebtedness to it for many of his conclusions. The subject occupies the remainder of the volume. It is of essential importance that skilled assistance should be at hand to render *immediate* and intelligent aid, if necessary, for the first thirty-six hours, as many lives are lost during this period from neglect or ignorance. The tube should be dispensed with at as early a day as practicable, and the whole after-treatment should receive careful study and close attention, as it has been by strict attention to the details, and by improvements in this direction, that the mortality of this dreaded procedure has been of late years diminished.

Viewed as a whole, this brochure contains much that every practical surgeon should know, and gives a full exhibition of the present position of this remedial measure, and its author is entitled to the thanks of the profession for the good work he has done. S. A.

ART. XLIII.—*A Guide to the Practical Examination of Urine. For the Use of Physicians and Students.* By JAMES TYSON, M.D., Hospital Lecturer on Path. Anat. in Univ. of Pennsylvania, etc. With a plate and numerous illustrations. 12mo. pp. 182. Philadelphia: Lindsay & Blakiston, 1875.

THIS admirable little volume treats first cursorily of the general physical and chemical characters of the urine, and then proceeds to a careful study of its different constituents in health and disease, and concludes with a few remarks on the differential diagnosis of renal disease, and on the mode of determining the composition of urinary calculi.

The different tests which are held in highest esteem for the detection and quantitative analysis of the various normal and abnormal constituents of urine are given clearly and carefully, and the reader is duly cautioned concerning the various circumstances which may interfere with the operation of the respective tests or their correct interpretation.

That a demand exists for books exclusively devoted to the examination of the urine seems to be proved by the appearance within the last few years of several brochures of this character, and to all who desire more elaborate information on the chemistry of the urine than is to be found in treatises on renal diseases (such as Robert's or Harley's) or in systematic works on diagnosis (like DaCosta's), where only one or two of the most approved and readily applied processes of analysis are given, we unhesitatingly recommend Dr. Tyson's manual. I. M. H.

ART. XLIV.—*Essentials of the Principles and Practice of Medicine. A Handbook for Students and Practitioners.* By HENRY HARTSHORNE, A.M., M.D., Professor of Hygiene in the University of Pennsylvania, etc. etc. Fourth Edition, thoroughly revised; with one hundred illustrations. Small 8vo. pp. 548. Philadelphia: Henry C. Lea, 1874.

WHATEVER prejudice may exist against works of this class among the older members of our profession, they are and always have been popular with students, and found to supply a want which exists among them. The pretentious and dogmatic *vade mecums* of our student days, fully justified the condemnation of such professed aids to students, but the present work is altogether of

a different and much higher order, and if properly used, without being exclusively depended upon, we think it may advantageously assist the novice in his studies. Entertaining these views, we recommend this work as the very best of its class of which we have any knowledge.

ART. XLV.—*On the Treatment of Pleurisy; with an Appendix of Cases, showing the Value of Combinations of Croton Oil, Ether, and Iodine as Counter-irritants in other Diseases.* By JOHN W. CORSON, M.D., Late Phys. to Class "of Diseases of Chest and Throat" in New York and Eastern Dispensaries. 12mo. pp. 31. New York: Wm. Wood & Co., 1874.

WE remember to have heard, when a student at Vienna some years ago, Prof. Hebra inveigh in most unmeasured terms against the use of counter-irritants, regarding them as incapable of doing good, and as the frequent cause of skin disease. This opinion is unquestionably an extreme one, and one which we fancy would be endorsed by but few physicians in general practice. On the other hand, Dr. Corson is disposed, it seems to us, to attach too much importance to their use, and to refer to them a larger share in the production of the very favourable results, which appear—for he gives us no figures—to have attended his treatment of pleurisy, than can be justly attributed to them. The combinations[1] of ether, iodine, and croton oil which he recommends as counter-irritants will, we have no doubt, hasten the absorption of pleuritic effusions, but they are vastly inferior in this respect to most of the diuretics. Besides which the eruption caused by croton oil is generally followed by cicatrices, which is, in our opinion, a great objection to its use, especially since in most cases the same end may be attained by milder means.

Except that, as we have already said, Dr. Corson lays too much stress upon counter-irritation, the treatment of pleurisy he recommends shows him to be a judicious practitioner, and one too who has made good use of the rather unusual opportunities he has enjoyed. His experience has shown him the advantage of consulting the palate even of poor patients by adding to their medicines an aromatic preparation, which not only renders these more acceptable to the stomach, but seems to increase their efficiency.

The book contains two wood-cuts, showing different positions in which the patient should be placed when the back of his chest is being examined. In one of these the patient is directed "to cross both arms and grasp, not these, but the highest points on the shoulders as far back as he could reach. He then pulled them steadily and firmly forward, so as to separate the shoulder blades, and hold them fixed as widely apart as possible behind." This process he calls *uncovering;* for it partly lays bare the ribs under both scapulæ and stretches and thins the thick muscles in the rear. In the other position the arms are crossed, and locked behind the head.

J. H. H.

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[1] The formulæ he recommends are as follows:—

Milder croton oil paint.
℞.—Olei croton. tiglii, ʒj;
Ether. sulphur. fort. ʒij;
Tinct. iodin. ʒv.—M.

Stronger croton oil paint.
℞.—Olei croton. tiglii, ʒij;
Ether. sulphur. fort. ʒiv;
Tinct. iodin. ʒij;
Potass. iodid. ʒj;
Iodinii, gr. x.—M.

Apply two or three coats at a time, with a camel's hair-brush, over a small surface, once a week.

QUARTERLY SUMMARY

OF THE

IMPROVEMENTS AND DISCOVERIES

IN THE

MEDICAL SCIENCES.

ANATOMY AND PHYSIOLOGY.

1. *A Simple Process for Estimating Urea in the Urine.*—With the exception of the yeast process for the estimation of sugar, there has been up to the present time no accurate method adapted for clinical use by which it was possible to make quantitative determinations of the various constituents in the urine. Of the normal constituents urea is by far the most important; yet Liebig's method, which is that commonly used for its estimation, is so lengthy and elaborate as practically to be useless for clinical purposes.

The following method devised by W. J. Russell, Ph.D., F.R.S., and Samuel West, B.A. Oxon., (*Practitioner*, Feb. 1875) is based upon a chemical reaction which has been long known, but which has not hitherto been available for general use, on account of the elaborate calculations which had to be made with every experiment. With the present form of apparatus these difficulties have been overcome, and accurate results can be obtained by it in a very few minutes. The apparatus is, moreover, easy to use, and inexpensive, and its various parts can, if broken, be replaced separately at a very slight cost.[1]

Urea, as was first shown by Dr. Davy, is decomposed by hypochlorous or hypobromous acid in the following manner:—

$$NH_4CNO + 3ClHO = 3HCl + 2H_2O + CO_2 + N_2,$$

that is to say, it is split up into water, carbonic acid, and nitrogen. If the carbonic acid be now absorbed by passing it through a solution of caustic soda, the gas evolved will be nitrogen alone. Davy proposed to measure this nitrogen and from it to determine the quantity of urea which had been decomposed, according to the formulà:—

60 parts by weight of urea = 28 parts by weight of nitrogen.

The decomposition is not quite so complete in reality as he stated. Sixty parts of urea by weight really produce only about twenty-six parts by weight of nitrogen; that is to say, there is a loss of about eight per cent. The importance of this loss of nitrogen we shall refer to later.

The reagent employed is a solution of hypobromite of soda in considerable excess of caustic soda; and the most convenient strength of solution is found to be that prepared by dissolving 100 grammes (3½ ozs.) of caustic soda in 250 c. c. (9 ozs.) of water, and adding to this, when cold, 25 c. c. (7 drachms) of bromine.

The solution unfortunately decomposes if kept for some little time, and it is safer to make it in small quantities as it is required. This may be easily and

[1] The apparatus is sold by Messrs. Cetti, Brook Street, Holborn, price 8s. 6d.

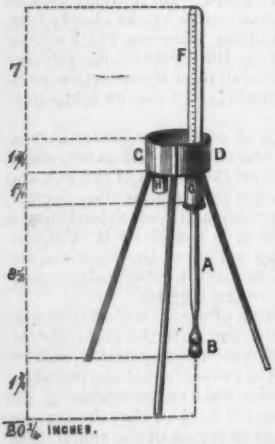
quickly done by keeping in stock a solution of caustic soda of the necessary strength, and adding to a portion of this the requisite quantity of bromine at the time the experiment is made.

The apparatus, the form of which is shown in the accompanying sketch, consists essentially of three parts—a tube, A, in which the reaction takes place; a measuring tube, F, to collect the gas produced; and a small pneumatic trough, C D.

The tube A, about nine inches long, is narrowed two inches from the closed end, and a bulb, B, holding about 12 c. c., blown on it. The upper part of the tube contains about 25 c. c. This is fitted, by means of an India-rubber cork, into the small elliptic tin trough, C D, about three inches long, standing upon three legs. In using the apparatus, a 5 c. c. pipette is filled with the urine, and the liquid is allowed to flow into the bulb of this tube. Water is added, thus washing down the urine which adheres to the sides of the tube, and filling the bulb up to the top of the constriction. A glass rod, with a piece of India-rubber tubing about half an inch long drawn over the end of it, is then introduced, so that the India-rubber plugs up the constriction. The hypobromite solution is then poured into the upper part of the tube until it is full, and the trough is afterwards half filled with ordinary water.

The graduated tube, F, is filled with water, the thumb placed on the open end, and the tube is inverted in this trough. The glass rod is then pulled out, and the graduated tube slipped over the mouth of the bulb-tube.

The reaction commences immediately, and a torrent of gas rises into the measuring tube. With the strength of hypobromite solution which we suggest, the reaction is complete in the cold in about ten or fifteen minutes; but in order to expedite it, the bulb is slightly warmed. This causes the mixing to take place more rapidly, and the reaction is then complete in five minutes. The reaction will be rapid and complete only when there is considerable excess of the hypobromite present. After the reaction the liquid should still have the characteristic colour of the hypobromite solution.



The simplest means of supporting the measuring tube is to have the bulb-tube corked into a well, G, which projects from the bottom of the trough about an inch downwards. The graduated tube stands over the bulb-tube, is supported by it, and rests upon the cork in the bottom of the well. It is convenient to have at the other end of the trough another well H, which will form a support for the measuring tube when not in use.

The gas collected is nitrogen saturated with aqueous vapour, and the bulb will obviously be more or less affected by temperature and pressure.

It has hitherto been necessary to make correction by calculations of some intricacy for the variations in the bulk of gas which these produce; but with the present form of apparatus it is found that these corrections may be avoided, and the volume of gas read off at once without calculation. The reason of this is the following: When urea is decomposed by hypobromous acid, the whole of the nitrogen, as stated above, is not given off, but there is a loss of 8 per cent. at 60° Fahr., which is about the ordinary temperature of wards: however, the increase in the bulk of gas caused by the temperature, moisture, and pressure, amounts exactly to 8 per cent.; that is to say, the increase due to these causes exactly equals the loss of nitrogen due to the incomplete decomposition. In other words, if we make no correction at all, we get exactly the quantity of gas we ought to have. Hence all calculations are avoided.

The measuring tube has upon it the figures i., ii., iii. These mean 1, 2, 3 grammes of urea in 100 c. c. of urine; *i. e.* 1, 2, 3 per cent., as it may be called; so that if after experiment the level of the gas stands opposite ii. on the tube, the urine experimented upon contains two per cent. of urea.

Sugar does not interfere with the reaction, and albumen only so far that the bubbles of gas take so long to subside. It is advisable therefore to remove the albumen by boiling quickly with a few drops of acetic acid, and to filter. 5 c. c. of the filtrate is then taken and estimated as above.

For further information as to the theory and practical working of the apparatus, reference may be made to the original paper read before the Chemical Society, and published in that Society's Journal for August, 1874.

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2. *Vaso-Motor Apparatus.*—In an able series of lectures recently published, M. Vulpian has discussed, with great detail, the anatomy and functions of the vaso-motor apparatus of nerves—that *terra incognita* of physiology and medicine. M. Raymond, in the *Progrès Médical*, page 65, gives an interesting account of M. Vulpian's views, which will incite many to a study of his work. M. Vulpian, he says, gives clinical proofs of the influence exercised by the lesions of the great sympathetic nerve on the vascular system; he afterwards enters on the question of the vaso-dilator nerves. Calling to mind that the vessels are provided with muscular fibres, arranged in an annular form, and whose contraction can only occasion a diminution of the calibre of the vessel, M. Vulpian shows that experiment has taught a singular and incontestable fact, the existence of nerves whose excitation brings on dilatation of the vessels under their influence. These nerves, of which we owe the knowledge to Claude Bernard, are named *vaso-dilators;* whilst the others have received the name of *vaso-constrictors.* M. Claude Bernard demonstrated this fact whilst repeating Ludwig's researches on the submaxillary gland. He demonstrated as to the anastomotic filament furnished to the lingual nerve by the chorda tympani, that the action of the lingual or of the glandular filaments which spring from this nerve is due, an action which consists in the arrest of the salivary secretion when the lingual is cut, and in the continuation of the secretion when the peripheric end of the cut lingual nerve is irritated; the chorda tympani is therefore a type of vaso-dilator nerves.

Claude Bernard has searched for the existence of other vaso-dilator nerves. It has seemed to him that the auriculo-temporal branch of the fifth nerve, which anastomoses with the facial, had a dilating action on the vessels of the ear, and the same was the case with the nervous filaments surrounding the carotid. Claude Bernard has further pointed out the pneumogastric as determining a dilatation of the vessels of the breast, a fact which is denied by M. Vulpian. The chorda tympani does not exercise its dilating action on the vessels of the submaxillary gland alone. M. Vulpian has demonstrated, by irrefutable experiments, that this action is extended to the vessels of the tongue.

Nerves described by M. Eckhard under the name of *nervi erigentes* are also vaso-dilators. They spring from the sacral plexus, and, with the pudic nerves, proceed to the corpus cavernosum. These latter have not any action with regard to erection, whilst the former produce it; it is probable that the irritation of the erector nerves reacts rather on the arterioles than on the areolæ of the corpus cavernosum. M. Goltz has lately endeavoured to show that the nervous centre of the erector nerves is situated in the lumbar region of the spinal cord.

Many hypotheses have been proposed to explain the action of the vaso-dilator nerves. Heidenhain's experiments have shown that atropia paralyzes the action of the chorda tympani on the secretion of the submaxillary gland; and, on the contrary, leaves intact the influence of this nerve on the vessels of the gland. M. Vulpian thence concludes that there are secretory nerves; and, indeed, how can the results of this experiment be accounted for, if the existence of these secretory nerves be not admitted? These experiments annihilate the hypothesis of the attraction of blood by the tissues. Must we see, in the action of the vaso-dilators, a phenomenon like that known in physics under the name of *the interference of light?* must an inhibitory action be admitted? M. Vulpian has adopted this last view, always making the reserve, that the vaso-dilator

nerves only act on the vascular tonus by their communication with the nervous ganglia which regulate the vaso-dilators.

The next question is, as to the origin of the vaso-motor nerves. They have their principal roots in the spinal cord; but their mode of origin is not precisely known, notwithstanding the opinion of M. Jacubowitch. It results, from this relation of the vaso-motors with the spinal cord, that lesion or irritation of the spinal cord must have a great influence on the nerves, and, consequently, on the vessels; this is indeed the case, and the partial lesions of the medulla give rise to vascular constrictions or dilatations in the parts in relation by their nerves with the region of the cord where the lesion exists, and each of these modifications results from an irritation, made evident either by a dilatation or a constriction, whence the variableness of the phenomena observed. It is now easy to understand how irritation practised on the surface of the body, for instance, acts by reflex action, passing by the spinal cord to the dilator or to the constrictor nerves. Here we find the explanation of a host of phenomena; for instance, of the reflex vascular dilatations invariably produced whenever the subcutaneous cellular tissue, the muscles, etc., are laid bare. It is a known fact, that these parts become the seat of a very evident congestion, and dilatation is not confined to the exposed region.

The opinion which has been adopted by a large number of physiologists, that there is only one vaso-motor centre, the medulla oblongata, is rejected by M. Vulpian on the ground of his experimental researches. In his opinion, there are a series of vaso-motor centres in the bulb, and specially in the spinal cord. If it be so, the question arises, whether the spinal cord and the medulla oblongata are the principal foci where the vaso-motors originate, and the only ones. Experiment has proved that the sympathetic ganglia may also be the seat of origin of the vaso-motor nerves and centres of reflex actions for these same nerves.

M. Vulpian afterwards shows the existence of the vascular tonus—that state of semicontraction necessary to the small vessels, and which gives a certain elasticity to their muscular coats. With regard to the question as to the mechanism by which the spinal cord exercises its action on the heart and vessels, M. Vulpian takes up the history of the subject to the discovery of Ludwig and Thiry, and establishes a very important physiological part of the question; that is, with regard to the depressor nerves. It is now well known that the spinal cord acts on the heart by the medium of the vaso-dilator and vaso-constrictor nerves, by augmenting and diminishing the arterial tension. These facts lead him to study the influence of the vaso-motor nervous system on the pressure of the blood, on absorption, on erection, on reflex congestion, on erectile tumours, and finally on the glands. The action of the nerves on the glands puts the importance of the physiological action of the vaso-motors in full prominence, explains many hitherto unknown actions, and will probably throw light on many more. The studies contained in this volume relative to the action of the nerves on the secretions, on the stomach, intestines, kidneys, and liver, are proofs that these expectations are by no means unwarrantable.—*Brit. Med. Journ.*, Feb. 20, 1875.

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3. *Studies in Biogenesis.*—Dr. ROBERTS's paper is divided into three sections. The first is on the sterilization by heat of organic liquids and mixtures. He finds that when beef-tea or a decoction of turnip is boiled for a few minutes and afterwards preserved from extraneous contamination it passes into a state of permanent sterility. This state is characterized by loss of power to *originate* organisms with conservation of the power of *nourishing and promoting* the growth of organisms. All organic liquids and mixtures seem capable of being brought to this state by exposure to a heat of 212° F., but the length of time during which exposure to this heat is necessary to induce sterilization varies greatly according to the nature of the materials; ordinary infusions being sterilized in ten minutes, whilst milk, chopped green vegetables in water, pieces of boiled egg in water, and other mixtures, were not sterilized unless the heat was continued for twenty to forty minutes. Hay infusion was sterilized, like other infusions, by boiling for a few minutes, but when rendered

alkaline by ammonia or liquor potassæ it was not sterilized except after an exposure to 212° F. for more than an hour; sometimes it germinated after two and once after three hours' exposure. The two factors—duration of heat and its degree—seem to be mutually compensatory, a longer exposure to a lower heat being equivalent to a shorter exposure to a higher temperature. Speaking roughly, an exposure for an hour to a heat of 212° F. appeared to be equivalent to an exposure of fifteen minutes to 228° F.

Section 2 is devoted to the capabilities of the normal tissues and juices to generate Bacteria and Torulæ without extraneous infection. Egg albumen, blood serum, blister serum, milk, grape, orange, and tomato juice, turnip, and potato tissue—these were rapidly removed from their ordinary sites and placed in sterilized tubes, and kept at temperatures varying from 60° to 90°, and the rarity with which Bacteria and Torulæ were developed when the last conditions of the experiment were carefully preserved led to the conclusion that the normal tissues of plants and animals were incapable of breeding Bacteria and Torulæ except under the stimulus of extraneous infection.

The third section is devoted to the bearing of these facts, which is that ordinary air and water contain, in addition to their proper elements, multitudes of particles capable of provoking germination. Dr. Roberts is therefore a panspermist, and he observes that were it hereafter established that bacteria and fungoid vegetations do under exceptional instances arise abiogenically, it would not overturn the panspermic theory, but would merely limit the universality of its application.—*Brit. and For. Med.-Chirurg. Rev.*, Jan. 1875, from *Proceed. Roy. Soc.*, vol. xxii. p. 289.

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4. *Dependence of the Arterial Blood-pressure on the Quantity of Blood.*—Worm Muller's experiments on dogs have established the remarkable fact that the vascular system can accommodate very large quantities of blood without there being any marked increase of the normal arterial blood-pressure, which was always measured in the carotid. More than sixteen per cent. of the body weight of the animal in blood could be injected into the jugular vein without (after the termination of the transfusion) the blood-pressure in the beginning of the aortic system becoming markedly higher than it was in the normal dog before the commencement of the experiment, *i. e.* the quantity of blood that the animal originally had, could be increased to three times its original amount without producing any marked increase in the arterial blood-pressure. Within certain limits this holds good, if the blood-pressure had been diminished either by section of the spinal cord, or by blood-letting. As soon, during the injection, as the blood-pressure had reached the value noted before the beginning of the experiment, the addition of several quantities of defibrinated blood did not raise the pressure above the normal. That the blood, in spite of the over-filling of the vascular system, remained within it, and that no important exit of blood or blood-plasma took place through the walls of the vessels, was established by the negative results after very careful *post-mortem* examination. To dispose of the idea of a simple serous exudation, the thoracic duct was opened to observe the out-flow of lymph during and after the injection of the defibrinated blood. The rapidity of the lymph current increased with the quantity of blood added, but a sinking of the blood-pressure with increased quantity of lymph was not observed. A direct proof of the overfilling of the vascular system is given in the effects of blood-lettings in an animal into which blood had been previously transferred. From such an animal quantities of blood, not sufficient to endanger the life of the animal, were withdrawn from the carotid, and from this animal, overfilled as it was with blood, on continuing the blood-lettings until death ensued, and even by pressing the limbs and body of the moribund animal, scarcely ever was the quantity of blood transfused again recovered. The results of the *post-mortem* examination showed no marked overfilling of the arteries, and only in the veins of the abdomen was there any appreciable overfilling observed. The author is of opinion that after transfusion, the blood is specially to be found in the capillaries distributed more or less over the whole body. He is further of opinion that the increase in the capacity of the vascular system is accomplished by the help of the capillary networks, of the smallest veins, and

the smallest arteries. Very probably throughout the whole body under normal conditions, many capillaries entirely empty or only partially filled exist, which become permeable to the blood-current, after considerable increase of the quantity of blood. A distension of the capillary networks is not a necessary consequence of the overfilling. This occurs, however, under very pronounced filling of the vascular cavities with blood, and as the author believes, at those places and in those organs, such as in the thoracic and abdominal cavities, where the overfilling is most observable.

Even with pronounced filling of the vascular system no change in the capacity of the heart for doing work (*Leistungsfähigkeit*) occurred. The pulse-beats remained with increased percentage of blood, either unchanged both in animals with divided and in those with intact spinal cord, or they were diminished so irregularly that the latter point could only under certain circumstances be brought into account. The lungs were found congested *post-mortem*. An increased friction of the blood in the lungs is not alone sufficient to explain the non-increase of the blood-pressure. Neither congestion of the right heart nor of the large veins which open into it was found.

If after transfusion the quantity of blood in the transfused animal was diminished, the paradoxical phenomenon was exhibited that before one-half of the blood injected was recovered, the arterial blood-pressure sank much below the *niveau* which it had before the transfusion. By continuing the blood-letting the animal could be brought near to death, even though the quantity of blood which it had, surpassed by several per cents. of its body-weight the original (normal) quantity of blood; in other words, animals which had received from one to three times their original quantity of blood were much more sensitive to blood-letting than in the normal condition. Absolutely, transfused animals yield more blood on being bled to death, which is easily explained by the strongly pronounced filling of the vascular system, but relatively they require much larger, perhaps twice as large, or may be still larger quantities of blood (than in the non-transfused condition), in order to preserve the normal blood-pressure, *i. e.* that necessary for life. In an animal which has been bled from both carotids, until nearly dead, even after blood has ceased to flow from the divided arteries, blood again flows from the carotid on dividing the cervical spinal cord (this observation I have repeatedly verified. *Rep.*), and the stream is increased on raising the posterior extremities and pressing on the abdominal and thoracic walls. The author then discusses the upper and lower limits of the physiological filling of the vascular system, and then follows a short chapter on plethora and transfusion.—*Journ. Anat. and Phys.*, Nov. 1874, from *Ludwig's Arbeiten*, viii. 159.

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5. *Acid of the Gastric Juice.*—M. RABUTEAU, at a late meeting of the Academy of Sciences in January last, communicated the result of experiments made by him to determine the nature of the acid which causes the acidity of the gastric juice. His results conform to those of Braconnot, Prout, Lassaigne, and Schmidt, that the gastric juice owes its acidity to hydrochloric, and not to lactic acid.—*Le Movement Médical*, Feb. 6, 1875.

MATERIA MEDICA, GENERAL THERAPEUTICS, AND PHARMACY.

6. *Properties of Jaborandi.*—An additional supply of this new and remarkable drug has been lately received both in France and England, which has enabled investigators to determine more definitely its source, its properties, and to some extent its therapeutic application.

The results of these investigations are so very interesting as to seem to require a full account of them to be given here.

Prof. GUBLER, at a meeting of the *Société de Thérapeutique*, exhibited

(*Gazette Hebdom.*, Feb. 19, 1875) several branches, with the leaves attached, of the plant, showing that the true medicinal jaborandi is the *Polycarpus pinnatus*. The name jaborandi is, however, given in Brazil to many other plants, which should not be confounded with this more active species.

The indications for the employment of this drug cannot yet be fully stated, according to Prof. G., but some of them are clear enough, viz., the anasarca and œdema met with in rheumatism, albuminuria, and diseases of the heart. Under its use M. Gubler has found serous effusions diminish, and by it he has cut short attacks of influenza. One of the most remarkable results which he has observed has been its effects on chronic bronchitis and emphysema with asthmatic paroxysms. In five or six cases the amelioration has been instantaneous. He met with the first of these in 1873, in a man to whom a cup of tepid infusion had been administered during an excessive paroxysm of asthma, and who fifteen minutes afterwards began sweating and expectorating. Almost immediately after this his respiration became quite easy, the patient declaring that his malady had been taken from him as with the hand. The jaborandi may also be advantageously given in subacute rheumatism; as also as a salivary revulsive, like calomel.

There seems to be a very curious relation observed (*British Medical Journal*, Feb. 27, 1875) between jaborandi and belladonna, a relation partly of analogy but mainly of opposition. Jaborandi resembles atropia in quickening the pulse, flushing the face, and in exerting a more decided influence on adults than on children. On the other hand, it is diametrically opposed to atropia in its action on the salivary, sudoral, and mammary secretions, on the pupil, and on the minute arteries. Further, the tendency of belladonna to cause delirium, contrasts with that of jaborandi to cause prostration and sleepiness.

Several of these points have been studied in some detail, and merit further consideration. And first, as regards its sialagogue action: the influence of atropia in checking the flow of saliva from the submaxillary gland has been shown to be independent of the vaso-motor nerves. Heidenhain's experiments, which have since been repeated and extended by others, render it tolerably certain that this phenomenon is due to paralysis of the terminations of the secretory filaments of the chorda tympani. The effect of muscarin (the active principle of the *agaricus muscarius*) has been shown by Schmiedeberg and Koppe to be exactly antagonistic to that of atropia, *i. e.*, to cause profuse salivation by stimulating those nerve-ends which are paralyzed by the latter alkaloid. The mode of action of jaborandi seems in this respect to be identical with that of muscarin. It has been proved, both experimentally and clinically, that atropia is able to arrest the flow of saliva caused by jaborandi; and Ringer found that a dose of the latter drug speedily removed the dryness of the mouth in a case of accidental poisoning by atropia. The antagonism between the two is quite as definite in relation to the secretion of sweat as to that of saliva. Sweating after jaborandi may be prevented or checked by the subcutaneous injection of one-hundredth of a grain of atropia. Vulpian has even gone so far as to found a hypothesis concerning the nervous mechanism by which the perspiratory function is regulated, on the analogy of the antagonism in the two cases. He thinks it probable that the activity of the sweat-glands is under the control of nerve-fibres analogous to those supplied to the submaxillary gland by the chorda tympani, and that it is more independent of the vaso-motor system than is commonly supposed.

Next, as regards the eye: belladonna acts, not only on those branches of the third nerve which supply the circular fibres of the iris, but on those which supply the ciliary muscle also. Hence the dilatation of the pupil is accompanied by palsy of accommodation, making near objects seem blurred and indistinct.

The particulars bearing on the above statements will be found more fully detailed in the subjoined articles.

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7. *Recent Experiments with Jaborandi.*—Dr. Wm. Martindale gives an interesting account (*Pharmaceutical Journal*, Jan. 16, 1875) of an experiment

made on himself with some of this drug recently obtained from Pernambuco. Compared, he states, with what he received from Paris, the leaflets are much more pungent in taste, and much more active physiologically. "When chewed the taste is piquant, and excites a glowing heat on the tongue, like that caused by pellitory root. He also found, from working with it, that it irritates the skin when applied externally. On the inner surface of the bark of the root, white shining crystals are distinctly visible; but, as Dr. Attfield is about to make a chemical investigation of the different parts, it is premature to offer any opinion about these. Therapeutically, Dr. Ringer is continuing his investigations at the University College Hospital.

"Having heard doubts expressed about the activity of the jaborandi last received, as compared with the results obtained in the first trials I witnessed at University College Hospital, I became somewhat sceptical about its efficacy, and, therefore, expecting to get little results, tried it upon myself. To me the effect seemed simply marvellous. I made an infusion of sixty grains of the bruised leaf in five ounces of boiling water, let it stand fifteen minutes, and strained it. On pouring the water upon the drug, I noticed that the characteristic odour almost entirely disappeared. The infusion was of a pale sherry colour, had a mawkish bitter taste, but did not excite the glowing heat upon the tongue that the leaf itself did; this I thought strange, and on tasting the dregs I found they still retained their pungent taste when chewed. It was evident to me that, if its diaphoretic properties depended on the principle having this pungent taste, boiling water does not extract it. At 11.30 P. M., on retiring to rest, I swallowed as much of the dregs as I could, probably fifty out of the sixty grains used, and washed them down with the infusion. In five minutes I felt a glow, an increased circulation, an uneasiness in the head, became restless, and the secretion of saliva began to increase. At 11.45, a quarter of an hour after taking the dose, I was perspiring freely. The salivation and perspiration continued to be profuse, until my sight became blurred. At a distance of four feet I could see my wife, but could not distinguish her eyes. On this occurring I became a little anxious, as I had evidently taken an overdose. I requested that Dr. Ringer might be sent for; he came about 12.15 A. M. The impaired vision still continued, but I was glad to find that it was only at a distance—near objects I could see distinctly enough. The pupils of the eyes were slightly dilated, I was informed. The pulse when first noted was 96, and got up to 104. The temperature was not taken. The depression was never very great, but a little before Dr. Ringer came I began to shiver, more clothes were put on the bed, and some spirit and water given to me. The excessive perspiration still continued from all parts of the body. A Turkish bath, which I have frequently had, and seen others have, was nothing to it; the saliva for a time required almost constant ejection; the secretion of this from the glands in the cheeks caused a kind of collapsed feeling in them. My speech was so affected that articulation was both difficult and indistinct. Eventually, about 1 A. M., I was sick, and vomited at first a quantity of saliva which I had swallowed. By putting my finger in my mouth vomiting was further excited, until a portion of the jaborandi returned. The effects were now subsiding; more spirit and water were given to me, and my night-shirt, soaked with perspiration, was changed. I was put into a warm blanket, and about 1.40 A. M. I fell asleep and slept a quiet sleep till 6 A. M. The pulse on awakening was 88—normally with me it is 80. I got up about 7.30 A. M., and although I felt squeamish all next day, I was able to attend to business as usual. When the action was at its height, on uncovering my arm, I am informed the perspiration passed off in steam from my hand and night-shirt sleeve. The saliva collected, which was distinctly alkaline, measured sixteen ounces; in addition to which, a quantity had flowed on to the pillow while I slept, as it was quite wet in the morning. I came to the conclusion that I should not like to pass through the ordeal again. My thanks are due to Dr. Ringer, whose presence and kindness greatly relieved my anxiety.

"We have undoubtedly in jaborandi a drug which produces a marked physiological action; how far it will prove useful therapeutically in cases of fever, diabetes, and other diseases, remains to be seen. A drachm dose of the last

received is no doubt excessive, that is if the whole be swallowed. The strained infusion, from what I hear, produces but little effect."

In the *Lancet* for Jan. 30, there is a communication from Drs. SYDNEY RINGER and ALFRED P. GOULD, giving much additional information and the results of numerous trials with it.

"We have recently," they state, "made thirty-seven careful observations; twenty on adults, whose ages varied from twenty to forty-five; and seventeen on children, between three and ten years of age. To the adults we gave sixty grains; to the children thirty, and sometimes sixty. These investigations have led to the detection of several new and interesting effects of jaborandi. They lead us to conclude that some of M. Robin's statements are inaccurate. They show us that children are very little affected by this drug. We administered generally thirty, sometimes sixty grains, giving both the solution and the dregs; and yet, strange to say, this dose often failed to produce any effect. In two cases only was the sweating abundant; in eight it was slight—in most, very slight, making the skin only a little moist; and in seven cases it excited no perspiration. Salivation was generally absent, and never more than to make the mouth rather moister than usual. There was very little flushing of the face, and this occurred only when perspiration was induced. The pulse was but slightly increased in frequency, from ten to sixteen beats, and this occurred only when the remedy acted on the skin. When the pulse was quick (and several of these children were convalescent and weak), we noticed that the pulse was still less influenced, and sometimes even fell. In our earlier observations on older children, where the effects were well marked, the pulse was much more quickened. When the skin was rendered moist, the temperature generally fell, the fall varying from 0.6° to 2° F. In eight of these cases it is noted that the child vomited, usually two hours after the administration of the medicine, but sometimes sooner. Occasionally the vomiting was repeated three times. When the vomiting was long delayed none of the dregs of the medicine were rejected. Many of the children were sleepy during the stage of depression. In no instance were the bowels affected, nor did the medicine excite any cough. To sum up: in many cases the children were not at all affected in their rest; the symptoms were very slight, most strikingly so when compared with the marked effects of jaborandi on adults.

"In the twenty observations made on eighteen adults, the perspiration in every case but two was most profuse, and in these exceptional instances it was free. It began in about ten minutes, and in one instance only was delayed for an hour. Salivation was absent in two cases only; in three cases it was slight; in the rest profuse, amounting in one experiment to 27 ounces. In one case only the pulse was unaffected, though there was marked perspiration. In the rest the pulse was quickened from 12 to 40 beats, the average being 20 beats per minute; the average increased frequency lasting two hours and a half.

"The temperature was taken in nine cases, three in the axilla, the rest under the tongue. In every instance the temperature fell during the sweating, the fall varying from 0.4° to 1.4°, the average being 0.9°, and lasting from one hour and a quarter to four hours and a half, and then becoming normal; that is, the temperature reached the point observed before the medicine was given. This was administered between 9 and 10 A. M. The average duration of the fall was three hours and a quarter. In one instance only did the temperature rise, and then only 0.4°, the rise lasting a very short time. On this point our observations are opposed to those of M. Robin, who states that the temperature rises at first, and then remains depressed two or more days. This statement being quite at variance with our observations (for we have said that in a few hours the temperature recovered itself), we noted the temperature in three men every three hours for three days before the administration of the drug, every hour during the action of the medicine, and every two hours for two days after the medicine. We found that in a few hours the temperature returned to the point noted before the drug was given, and on the two following days was the same as on the two days previous to the experiment. In one case only the flush of the face and neck was absent, and in every case save two the flush

was followed by pallor and more or less depression, or even prostration. In half the cases we noticed slight cough due to increased bronchial secretion, but this was always slight. In no instance did the medicine relax the bowels, so that its action on the intestinal mucous membrane must be slight. In one-half the cases the patients became decidedly sleepy, this occurring during the pallor, one, two, or three hours after the administration of the drug. A sensation of sickness, and sometimes decided nausea, occurred in two-thirds of the cases. In several cases the sight was decidedly affected. Mr. Martindale first drew our attention to this fact. He took, experimentally, a free dose of the medicine, and we saw him an hour and a half afterwards, when he said everything at a little distance looked hazy. On testing his sight we found that he could read moderate-sized type at about a foot distance, but at two feet the type became indistinct. This led us to investigate the effect of jaborandi in this respect in other persons. In three other cases, after the internal administration, the sight became decidedly affected; but the size of the pupil was unaltered. Mr. Martindale prepared for us an extract dissolved in glycerine, which we introduced into one eye of thirty-one persons. In nineteen cases the pupil became decidedly contracted, the amount of contraction varying, in some being slight, in others reduced by one-third, in two instances to one-half. We noticed that the pupil acted sluggishly in eleven cases. In a few hours the contracted pupil regained its natural size; but in one case the contraction was noticed twenty hours after the application. M. Robin finds that the tears and the nasal secretion are increased; but in four only of our cases were the lachrymal and nasal secretions increased sufficiently to attract our attention or that of the person experimented on. In eleven cases complaint was made of pain over the pubes, and in some instances this was severe, and was generally accompanied by a strong desire to pass water, which afforded relief. A good deal of trembling, especially of the upper extremities, followed in two instances after the administration. This was the case with Mr. Martindale, which did not appear to be due to nervousness. One man complained of much throbbing of the head the day following the experiment. Many patients complained of feeling alternately hot and cold, or chilly.

"It will be seen that our later observations prove a marked antagonism between jaborandi and belladonna. Belladonna checks the secretion from the skin, the salivary glands, the mucous membrane of the nose, bronchial tubes, stomach, and intestines, and dilates the pupil and contracts the arterioles; jaborandi, on the other hand, increases enormously the perspiration and saliva, and, in a much less degree, the secretion from the mucous membrane of the nose, the bronchial tubes, and the stomach and intestines. Robin asserts, moreover, that it lowers arterial tension, probably by paralyzing the vaso-motor nerves, and thus causing dilatation of the arterioles. Belladonna excites delirium, whilst jaborandi often produces sleep. This antagonism was well displayed in four instances. On three occasions, to three different men, we administered sixty grains of jaborandi, and when the perspiration and salivation were profuse we injected subcutaneously $\frac{1}{100}$ of a grain of atropia. In five minutes the perspiration and salivation were considerably diminished, and in from ten to twelve minutes the skin was preternaturally dry and the salivation was checked, but in one case continued a little after the cessation of the perspiration. It curiously happened that a lad was admitted into University College Hospital poisoned by atropia. He had taken one grain of the alkaloid five hours before treatment. His tongue and mouth were quite dry. A quarter of an hour after taking thirty grains of jaborandi his mouth became much less dry, and in an hour he was sweating freely and his mouth was naturally moist.

"Belladonna, it is well known, arrests the secretion of milk, and we were anxious to ascertain whether jaborandi was antagonistic to belladonna in respect to its influence on this secretion. We administered thirty grains of jaborandi to a woman thirty-eight years old, confined of her ninth child four months previously. During suckling she had very little milk, and the quantity had become much less of late. We gave her the medicine at 10 A. M. She had suckled her child seven hours before. In ten minutes the drug produced its

usual symptoms; in half an hour her breasts, which previously were flaccid, became tumid and distended, and on pressure yielded considerably more milk. In forty minutes the increase was still more marked, jetting forth in four or five streams. In eighty minutes the milk was less abundant, though considerably more so than before the experiment. The woman herself noticed the decided increase of her milk, To another woman, aged twenty-five, whose child is thirteen months old, we gave two doses of thirty grains, as the first had no effect. She emptied her left breast every ten minutes by pressure, and each of the three first emptyings yielded 40 minims. As soon as perspiration and salivation became free the quantity rose to 80 minims. The next time yielded 100 minims, the following 155 minims, the next time 80 minims. The salivation and perspiration at this time ceased. The next observation yielded 125 minims, the next 87 minims, the next 70 minims, and the last 40 minims. This woman, whose case is not included in those given before, complained of severe pain over the pubes, with desire to urinate, the pain immediately ceasing after micturition.

"In some of their effects, however, jaborandi and belladonna agree. Thus, both flush the face and quicken the pulse; and both affect children much less than adults. Belladonna quickens the pulse by its paralyzing influence on the pneumogastric, and possibly by stimulating the sympathetic nerves. We have no evidence that jaborandi paralyzes the pneumogastric, or stimulates the sympathetics supplying the heart, but M. Robin has shown that it lessens arterial tension, probably by dilating the arterioles; and it is well known that dilating the arterioles, and thereby allowing the blood to pass more quickly from the arterioles to the veins, quickens the heart-beats. Hence it is very probable that the quickening of the pulse by jaborandi is due to its influence on the arterioles; and thus, instead of affording an instance of similarity of action between these two drugs, affords another example of their antagonism, for belladonna contracts the arterioles. While referring to the relations of these two drugs, we may point out that both sometimes affect the bladder. Jaborandi, as we have seen, causes pain over the pubes, with desire to pass water, the pain subsiding when the bladder is emptied. These facts render it probable that jaborandi causes contraction of the bladder, for it does not augment the quantity of the secretion.

"Jaborandi probably paralyzes the sympathetic nerve, the effect being shown by the deep flushing of the face. M. Robin ascribes its effects to its influence on the sympathetic. But there are various reasons to doubt this conclusion. It is improbable that mere increase of blood could cause so great an increase of sweat and saliva. Belladonna flushes the face, but completely arrests the sweat. Again, it has been experimentally shown that belladonna will check the secretion from the submaxillary gland, although by irritation of the chorda tympani nerves the bloodvessels supplying the gland are dilated and full. It is true the flushing from jaborandi immediately precedes the outbreak of perspiration, but soon the flush declines, and is succeeded by marked pallor, yet the perspiration continues for hours, being often even more abundant than during the flush. To test whether the effects of jaborandi wore off by repetition, we administered sixty grains to a man on three consecutive days, and the symptoms were as marked on the third as on the first day. On each day, in a few hours, the temperature recovered from the depression, rising to the height observed before the medicine was given. We should have continued this investigation some days longer, but the man appealingly protested that we were giving him more than his fair share of experimentation. In two other cases we gave sixty grains on two consecutive days, and the effects were as marked on the second as on the first. In one of these cases the temperature was observed, and on both days the temperature in a few hours recovered from its depression. These cases strikingly show the erroneousness of M. Robin's assertion that jaborandi causes a depression on the day following. On the other hand, we found the effects soon ceased in children, and sometimes the second dose failed to excite perspiration.

"It may be suggested that the perspiration was due to the nausea and vomiting excited by the drug. Those who witnessed the effects of this medi-

cine will certainly not ascribe them to the depression from nausea: but we may add that the perspiration was too profuse to be due to mere depression and nausea. Moreover the perspiration occurred often some hours before the nausea or depression set in. Again, in children, though the drug in some cases caused much and repeated vomiting, there was no perspiration; moreover, in many cases, especially among adults, the full physiological effects of the drug were obtained without either nausea or depression.

"We have tried in several cases a tincture from the leaves, and in one case an extract made from the tincture, and found these preparations equally effectual as an infusion with the dregs. We find also that a strained infusion is equally efficacious as one with the dregs, from which we conclude that the active principle is not the oil, so abundant in these leaves. In one case we administered a strained infusion of the root without any effect, and in three cases an infusion made from the bark of the stem, giving also the dregs. The last preparation is also active, though it appeared to us to excite more vomiting, and to cause more depression than the preparation from the leaves."

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8. *Physiological Effects of Jaborandi.*—At the meeting of the Biological Society of Paris on November 28, M. CARVILLE communicated the results of some experiments on the action of jaborandi, made by him in M. Vulpian's laboratory.

These experiments were made from a purely physiological point of view, with the intention of studying the mechanism of salivary hypersecretion in the submaxillary gland in dogs. The facts noted up to the present time show that an injection of twenty cubic centimetres (a little more than five drachms) of water, in which two grammes (thirty grains) of jaborandi leaves had been infused, into the crural vein of a dog which had had curara administered to it, and then been submitted to artificial respiration, brought on an excessively copious secretion of saliva, in less than a quarter of an hour. By means of a canula inserted into Wharton's duct, the saliva may be collected both before and after the injection, during a quarter of an hour; and it was found that this secretion increased to four cubic centimetres under the influence of jaborandi; the saliva likewise becoming thick, thready, and opalescent. A subcutaneous injection of five centigrammes of atropia immediately stops this secretion. Division of the lingual nerve, and of its branches going to the submaxillary gland, has no effect whatever on the action of jaborandi on this gland.

Jaborandi has an analogous action on the urinary excretion; a canula placed in one of the ureters shows that this excretion was increased in the proportion of from one to two cubic centimetres.

Experiment has also demonstrated that intravenous injection of water in the same proportion has no influence whatever on the salivary secretion. From four to five hundred grammes are required to obtain a very temporary and trifling increase of salivation. In fine, the experiments hitherto made show that the action of jaborandi on the submaxillary gland of the dog does not affect the vaso-motor systems.

M. Carville proposes in further researches to resolve the question, whether this action takes effect on the peripheric extremity of the nerves of the gland, or on the secretory elements of that organ. M. Bernard drew attention to the fact that the conclusion to be drawn from M. Carville's experiments would be, that jaborandi does not act on the secretory nerve of the submaxillary gland. It may, however, act on the sympathetic nerves, inasmuch as the salivation observed after section of the cord of the tympanum was, in M. Carville's experiments, exactly like that produced by cervical sympathy. M. Bernard has shown that the saliva in these cases is viscid and rather copious, and M. Carville has found these characteristics present in his experiments.

M. Rabuteau remarked that he inclines to believe that jaborandi does not act on the nervous system, but on the striped muscular fibres. In the case noted, it must have been the muscles of the arterioles which were paralyzed, since there are no striped fibres in any other part of the parotid gland.—*Lond. Med. Record*, Dec. 23, 1874.

9. *Effects of Jaborandi on the Eye.*—Mr. JOHN TWEEDY has carefully investigated the effects of jaborandi on the eye, and for that purpose applied some of the extract on the conjunctiva. From these experiments he concludes "that jaborandi locally applied to the eye causes, (1), contraction of the pupil; (2), tension of the accommodative apparatus of the eye, with approximation of the nearest and furthest points of distinct vision; (3), amblyopic impairment of vision from diminished sensibility of the retina. These effects, however, do not last long. In his own case the approximation of the near and far points of distinct vision had declared itself in a quarter of an hour, and reached its maximum in about forty minutes. It then gradually subsided, and had entirely passed off and the eye resumed its normal state in about an hour and a half."—*Lancet*, Jan. 30, 1875.

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10. *Boldo.*—This is one of the latest novelties offered to our materia medica. According to the *Chemist and Druggist*, the leaves are used on account of the aromatic oil they contain. The alkaloid discovered has been called boldine by Claude Verne and M. Bourgoin, the joint discoverers. The tree is indigenous to the New World; the leaves are covered on their surface with small glands. In South America, the plant is a popular remedy against syphilis and diseases of the liver. The essential oil is contained in cells, which are met with in nearly every part. The oil-vessels are perfectly spherical and of large diameter. The volatile oil is the most abundant product, as much as two per cent. having been frequently obtained, and is a mixture of various bodies. The preparations used are (1) alcoholic extract; (2) aqueous extract; (3) essential oil; (4) tincture; (5) wine with the Madeira; (6) syrup; (7) elixir. The leaves and flowerstems are alone employed. The dose of the wine is one tablespoonful to a wineglassful once or twice a day. Vomiting is induced by two large doses.

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11. *Therapeutic Action of Ipecacuanha and its Alkaloid.*—Dr. POLICHRONIE (*Thèse de Paris*, 1874) has made a series of very interesting researches for the purpose of discovering the mode of action of ipecacuanha and of emetia. The clinical facts ascertained confirmed M. Chouppe's result. M. Polichronie's conclusions are as follows: Emetia is the really active principle of ipecacuanha. All the physiological, therapeutic, and toxic properties of this plant are due to the presence of this alkaloid. Ipecacuanha administered in injections, in dysentery as well as in diarrhœa, possesses just as powerful properties as when it is administered by the mouth according to the Brazilian method. Injections of ipecacuanha form one of the best imaginable treatments for infantile cholera, and may be borne for a considerable time without weakening the little patients. In the diarrhœa of tuberculosis, injections of ipecacuanha give good results at all stages. This medication may also be advantageously employed to combat the profuse perspiration of phthisis. Emetia is a very toxic substance; it kills animals in two ways, sometimes by the prostration of the nervous system which it causes, sometimes, when given in small doses, by the intense enteritis which it brings on. Two hypotheses may explain the favourable action of ipecacuanha in diarrhœa: either a constrictor action on the vessels which would diminish the abundance of the secretions, or a substitutive action resulting from the inflammation of the mucous membrane. There is, however, no vaso-constrictor action, as demonstrated by the experiments made on the nerve of the submaxillary gland, and on the arterial tension. The production of inflammation of the gastro-intestinal mucous membrane, and the length of time after which vomiting appears, seem, on the contrary, to plead in favour of the second hypothesis. Emetia brings on vomiting at the moment it eliminates itself by the gastric mucous membrane, as proved by the delay of the sickness and even more frequently its entire absence, after the section of the two vagus nerves; in this respect it acts quite differently from apomorphia and tartar emetic. These two substances, in fact, cause vomiting as quickly when the two nerves are cut as when they are intact. Finally, physiological and chemical researches into the action of this drug still more plead in favour of the elimination of the emetia by the gastro-intestinal mucous membrane. Emetia has no direct vomitive action on the central nervous system, which is proved by direct injections of

this substance into the cerebral arteries. It may, therefore, be admitted that in diarrhœa emetia acts by substituting a true inflammation leading to spontaneous cure for pathological inflammation; its effect under these conditions will be in all respects comparable to that of purgatives or of nitrate of silver. A vaso-motor action can no more be admitted in the perspirations, and we must believe either that by eliminating itself by the sudoriparous glands in tends to dry up their secretion, or that it acts by the revolution it produces in the digestive tube.—*London Med. Record*, Jan. 27, 1875.

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12. *Therapeutic Use of Nitrite of Amyl.*—Dr. FUCKEL recommends the use of nitrite of amyl in cardialgia, in an article in the *Deutsches Archiv für Klinische Medicin*, 1874. In all cases not complicated with gastric ulcer, the inhalation of a few drops was followed by the disappearance of the pain in a few minutes. The pain, it is true, sometimes returned in half an hour or later; but it was less severe, and always ceased on another application of the remedy. The author also met with nearly equally satisfactory results in the neuralgic disorders accompanying menstruation. He also relates a case of so-called rheumatic tetanus, in which the attacks ceased after the inhalation, three times daily, of two drops of the nitrite of amyl.—*Brit. Med. Journ.*, Jan. 30, from *Centralblatt*, No. 57, 1874.

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13. *Apomorphia and its Physiological and Therapeutic Properties.*—There has been much discussion for some time past respecting apomorphia and its physiological and therapeutic properties. Apomorphia, or rather the hydrochlorate of apomorphia, has chiefly an emetic action. It appears from many experiments made in the first instance in Germany and England, and more recently in France, that apomorphia produces vomiting, by what channel soever it reaches the organism, but that its effects are more prompt and more certain when it is introduced directly into the blood by intravenous or subcutaneous injection. If given by the mouth, the dose must be increased, and the effects are less certain. From the assemblage of facts known up to the present time, it would appear that apomorphia may be employed in subcutaneous injection without producing local accidents such as inflammation of the skin, consecutive abscesses, etc.; nor does the process seem to be very painful. The principal results obtained according to the reports of the medical men who have employed it, and who agree as to its principal points, are as follows: During the two or three minutes immediately following the injection, the patient does not feel anything. Soon a sensation of weight at the stomach, followed by a slight pain in the head, comes on. Then salivation becomes copious, the body is covered with perspiration, one or two efforts at vomiting, without any result, occur, and at the third, or more rarely the fourth effort, the patient vomits three or four times successively; then comes a period of calm. The vomitings return after an interruption of five or six minutes, followed by another interval of calm, and the same scene is repeated five or six different times, to terminate definitely at the end of about half an hour, and to give place to a very quiet sleep, lasting from half an hour to an hour. Such, in brief, is the usual order of the effects produced by the hydrochlorate of apomorphia, according to M. CHOUPPE'S paper on the subject, published in the *Gazette Hebdomadaire* for December, 1874, which contains all that is known on this new therapeutic agent.

The hydrochlorate of apomorphia has been injected in doses of from six to twelve milligrammes ($\frac{9}{10}$ to 1½ grains), according to circumstances. Some experimentalists have fixed the dose at ten milligrammes (1½ grain) for an adult male, eight milligrammes (1¼ grain) for a woman, and six milligrammes ($\frac{9}{10}$ grain) for a child. According to M. Chouppe, one centigramme (1½ grain) ought to be considered as the average dose for an adult. It must, however, be noted that a state of impending syncope, of such a nature as to cause grave apprehensions, has already been observed in several patients. A case in point is reported in the *Gazette des Hôpiteaux* of January 16, by Dr. Brochin, with the intention of warning practitioners against one of the possible dangers of this new drug. A woman, forty years old, went into the hospital at Geneva, on October 22, complaining of gastric troubles without fever. After some days,

she was attacked by sore throat and complete anorexia. The tonsils were red and swollen, and the tongue very much furred. A hypodermic injection of three or four milligrammes of hydrochlorate of apomorphia was administered to her in the sternal region. The pulse was full and marked one hundred beats. In four minutes the patient felt slight uneasiness, and a little vertigo; she said she felt her head turning round and becoming stupid She turned pale, became insensible, her pulse became extremely weak, intermittent, and then imperceptible; the pupils were dilated, and the respiration seemed to be entirely suspended. Slight tonic convulsions showed themselves in the left corner of the mouth and in the left cheek. The patient became inert, and did not answer to the questions addressed to her. When M. Prevost, under whose care she was, saw these alarming symptoms, he had recourse to every available means of exciting reflex action, such as sprinkling with cold water, inhalations of ammonia, energetic frictions, mustard poultices, etc. The patient recovered consciousness in three minutes and vomited twice, after which she again fainted, became extremely pallid, and the pupils were alternately dilated and contracted. Counter-irritation was again tried, and she was also electrified with an induction-current on the anterior portion of the chest. Improvement set in and gradually increased, until in about half an hour fresh vomitings followed by fainting again came on. Brandy and wine were given to the patient. In another ten minutes all danger seemed over, and she slept soundly for half an hour. She felt better when she woke, but up to twelve o'clock she continued to have sudden pallors, which did not, however, go so far as syncope. She, however, eventually recovered from the effects of the injection, and also from the gastric affection for which she had sought advice.—*London Med. Record*, Jan. 27, 1875.

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14. *Effects of the Alcoholic and Watery Extracts of Ergot.*—Dr. H. Köhler describes the results obtained by a series of comparative experiments with the substances to which the name "ergotine" has been incorrectly applied. The ergotine prepared by Wigger is an extract of the constituents of ergot, soluble in alcohol but insoluble in water; whereas that of Bonjean contains the constituents soluble in water but insoluble in alcohol. It is obvious that these substances, although called by the same name, must be very different; and it also appears that neither of them is a distinct chemical compound, such as quinia or morphia, and it is misleading to call them by a name suggestive of that. It seems that Bonjean's ergotine (the watery extract) stimulates the depressor centres in the heart, and the vaso-motor centres in the medulla oblongata, thereby producing slowness of pulse and contraction of the arteries, with consequent increase of the blood-pressure. Large doses paralyze the heart. Wigger's ergotine has no influence on the heart or arteries. It, on the other hand, acts as an acrid poison, irritating mucous membranes, and even producing convulsions. Both ergotines reduce the temperature and retard respiration, but Wigger's more than Bonjean's. (In dogs, Bonjean's even accelerates respiration.) Bonjean's ergotine reduces the irritability of the peripheral motor nerves when it acts directly on them, while Wigger's increases it. Both widen the pupil, and both diminish the irritability of the sensory nerves. From these facts it seems obvious that a discrimination must be made between these two substances in their therapeutic use. When the object is to cause contraction of the bloodvessels, slowness of pulse, reduction of temperature, and reflex action, then Bonjean's is the ergotine to use. Wigger's is useless as a hæmostatic, and when it is wanted to reduce temperature or reflex action it is not so good as the other, on account of its narcotic properties. Wigger's ergotine, on the other hand, increases the irritability of the peripheral motor nerves; hence, to produce labour it may be best to combine the two and give the ergot in substance. An infusion, of course, only gives the constituents soluble in water.—*Glasgow Med. Journ.*, Oct. 1874, from *Virchow's Archiv*, vol. lx. Pt. III.

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15. *Ether as an Anæsthetic.*—The late British journals show that the profession in that country are at last awakening to the knowledge of the superior safety of ether over chloroform as an anæsthetic. This journal has always

endeavoured to impress upon its readers the great danger, we might say the unjustifiableness, of the use of chloroform, and we are glad to find that the profession in Great Britain, aroused by the frequent reports of cases of fatal poisoning by chloroform, are beginning to realize the danger of chloroform, and that in ether we have an almost absolutely safe anæsthetic.

In the *Lancet* (Jan. 30th), it is stated that "St. George's Hospital has an experience of nearly four years during which ether has been used there as the ordinary and prevailing anæsthetic, and during which it has been amply proved to be speedy, convenient, and effectual for all purposes."

Dr. Thos. Keith, of Edinburgh, the successful ovariotomist, states (*British Med. Journal*, Jan. 30th) that he has given ether in ovariotomy and other prolonged operations, or whenever it was necessary in feeble patients to give an anæsthetic, ever since the beginning of 1867, and he adds that his "confidence in sulphuric ether as the best practical anæsthetic we yet have does not diminish. Its low specific gravity must make it less dangerous than the others. It is not perfect, but it answers my purpose better than any other. It saves my patients from the misery of after-vomiting, and, in ovariotomy, from the chance of losing their lives in certain cases of bad adhesion from bleeding being set up by the sickness after the abdomen is closed. Whether of itself it diminishes the risk of operations, I cannot tell; but I am inclined to think that it does often save the feeble ones. This much I can say, that ether has now been given in one hundred and thirty-five cases of ovariotomy, and in two cases of successful removal of the uterus for fibro-cystic tumour. In every case, the anæsthesia was profound, many of the operations were very tedious, and, of the last sixty-six operated on, sixty have recovered."

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16. *Copaiba as a Diuretic.*—Mr. E. L. DIXON records (*The Practitioner*, Feb. 1875) three cases of dropsy, in which he administered copaiba as a diuretic with great benefit. "The drug seemed to act by increasing the amount of the urinary water, for the sp. gr. fell as the amount of the urine increased."

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17. *Rhamnus Frangula as a Substitute for Castor Oil.*—Dr. J. C. O. WILL recommends (*Med. Times and Gaz.*, Feb. 6, 1875) the fluid extract of *Rhamnus frangula*, black alder, as possessing all the desirable properties of castor oil without its disagreeable ones. The extract he employs contains in each drachm the equivalent of one drachm of the bark. "This extract is a dark brown, thickish fluid, with a rather sweetish and far from disagreeable taste. The dose, of course, varies according to the effect desired, the age, and the condition of the patient; but I have proved from experience that the quantity suggested by the makers of the extract—viz., one to two drachms—is, as a rule, too small for an adult. For a child one drachm is sufficient, but for an adult a dose of from two and a half—that is, an average dessertspoonful—to five drachms is necessary, and I generally order the following: ℞. Extracti rhamni frangulæ liquidi ʒv, aquam ad ʒj. M. Sig.: the half to be taken in a wineglassful of cold water, and should the bowels not move in four hours the remainder to be given; or the first dose at night, and the second in the morning, should no motion have taken place. The effects are much akin to those of castor oil, but there is no nausea, there are no eructations, and there is no griping. With regard to the last symptom, though it is, as I have already stated, but slight in the case of castor oil, it is hardly ever present here in even the least degree, only one patient of the many to whom I have given it complaining of it at all, and in her case the bowels had not been opened for four days, and she had only a very little uneasiness. The stools are not generally loose, and never watery; it usually acts only once, but in two of my cases three motions followed five drachms. It seems to have, in addition, as first stated by Mr. Giles, tonic and aromatic qualities, by which the muscular action of the bowels is slightly stimulated; and it is probably to this that its usefulness in habitual constipation is to be attributed. I have now prescribed it in many different forms of disease, and in all it has answered well. I think that it will prove particularly useful in children; in those suffering from hemorrhoids, or

other affections of the rectum; after surgical operations about the pelvis or abdomen; in inflammatory or spasmodic diseases of the genito-urinary organs; in pregnant and puerperal females; or, to quote the words of Christison when speaking of oleum ricini, 'in all circumstances where it is desirable to move the bowels gently without occasioning local irritation or general disturbance.'"

18. *Antagonism of Medicines.*—In our preceding number we gave the results of the experiments made by a committee of the British Medical Association, on the antagonism of certain medicines, and the following are the results of these investigations in regard to the other articles experimented with:—

VI. *As to the Antagonism between Tea, Coffee, Theine, Caffeine, Guaranine, on the one hand, and Meconate of Morphia on the other.*

In this investigation, one hundred and seventeen experiments were performed.

1. Theine is antagonistic to meconate of morphia, inasmuch as the action of the one substance modifies that of the other, and may even save life from a fatal dose of either substance.

2. Meconate of morphia delayed the appearance of the convulsions characteristic of the action of theine; but, on the other hand, theine, if given in large doses, did not affect in a marked degree the action of meconate of morphia, because symptoms of poisoning by theine were soon manifested.

3. Further experiments on cats showed that, (*a*) while a cat may recover from the effects of a dose of $1\frac{3}{4}$ grains of meconate of morphia given alone, it will not recover from the effects of a dose of 2 grains, even although the effects of the latter dose are modified by those following the introduction of 4 or 5 grains of theine; (*b*) that in three cases the animals recovered from the effects of $1\frac{1}{8}$ grains of meconate of morphia and 4 to 5 grains of theine, while they died when the same dose of meconate of morphia was administered eight days afterwards; (*c*) that, when the dose of theine was increased beyond five grains, the animals invariably died, apparently from the effects of theine.

4. Experiments on rabbits, as to the antagonism between meconate of morphia and theine, were found to be unsatisfactory as regards the purposes of this inquiry, because both drugs produce epileptiform convulsions in these animals.

5. The results obtained in investigating the action of caffeine and guaranine as antagonists to meconate of morphia were similar to those observed with reference to theine.

6. Experiments were made on dogs to ascertain the effects of strong infusions of tea and decoctions of coffee as antagonists to meconate of morphia. These were unsatisfactory, chiefly because the tea or coffee was usually vomited so soon as to prevent the possibility of the exercise of any physiological antagonism. At the same time, it was observed in several instances that the administration of tea or coffee so excited the animals as to prevent them from falling into stupor or coma after a dose of meconate of morphia, which would have produced this effect had the tea or coffee not been given.

VII. *Antagonism between Extract of Calabar Bean and Strychnia.*

In this investigation, thirty experiments were performed.

Although the symptoms produced by either substance were modified considerably by the action of the other, there was no instance of recovery from a fatal dose.

VIII. *As to the Antagonism between Bromal Hydrate and Atropia.*

In this investigation, thirty-six experiments were performed.

1. There is a distinct physiological antagonism between bromal hydrate and atropia.

2. After a fatal dose of bromal hydrate, the introduction of atropia arrests excessive secretion from the salivary glands and mucous surfaces of the lungs, and thus obviates the tendency to death from asphyxia caused by the accumulation of fluids in the air-passages. Atropia also causes contraction of the

bloodvessels, and thus antagonizes the action of bromal hydrate, which causes dilatation of these vessels by paralysis of the sympathetic nerve.

3. While atropia may save life after a fatal dose of bromal hydrate, the converse apparently does not hold good, as we have never succeeded in saving life after a fatal dose of atropia by the subsequent injection of bromal hydrate.—*British Med. Journ.*, Jan. 23, 1875.

19. *Chemistry of Therapeutics.*—The number of the *British Med. Journal*, for Jan. 30th, contains an interesting article by Dr. JOHN MCKENDRICK, "on the influences which a knowledge of the facts and laws of chemical science have, or ought to have, upon the practice of therapeutics." The conclusion at which he arrives is "that we know little regarding the chemical processes occurring in the living body, either in health or in disease, which can be of much service in the practice of therapeutics. But we know that chemical processes do occur which are closely connected with the manifestation of vital phenomena. If such chemical changes do occur, we may reasonably expect to be able to influence them by the introduction of chemically active substances. This opens up another line of inquiry; namely, how far can we produce changes in physiological action by changing the chemical composition of the substance introduced into the body? The answer to this question is not only likely to be of practical service to therapeutics, but it may reflect light on the true character of those chemical changes occurring in the living tissues, the investigation of which is so difficult."

MEDICAL PATHOLOGY AND THERAPEUTICS, AND PRACTICAL MEDICINE.

20. *Treatment of Typhoid Fever by Cold.*—Dr. F. T. ROBERTS, Assistant Physician and Teacher of Clinical Medicine in University College Hospital, gives (*Practitioner*, January, 1875) the following as the conclusions which he has arrived at with respect to the treatment of typhoid fever by cold.

"1. It is highly desirable that the members of our profession should be more generally impressed than they are at present with the usefulness of the various modes of applying cold to the surface of the body in febrile cases, under certain circumstances; and that they should be prepared without hesitation to carry one or other of them out efficiently whenever this plan of treatment is indicated. This applies to typhoid in common with other fevers.

"2. On the other hand, to adopt a routine hydropathic treatment of any fever seems to me most objectionable, and this applies especially to the more severe methods which are advocated. As already remarked, they are not easily carried out in general practice; they are certainly not required in a large proportion of cases; most of them are anything but pleasant to the patients, and they may prove very trying and exhausting, especially if frequently repeated, as they usually need to be if the treatment is efficiently fulfilled; while it must be remembered that they are not harmless measures, but may have a powerful influence for evil as well as for good. With regard to typhoid, many cases do not come under observation until it is too late to attempt to check the primary fever, even supposing that the intestinal lesion could be thus limited. For these and other reasons I do not see that, at present at least, a hydropathic treatment of typhoid fever in general practice has any claim to our support. If it is thought worthy of trial it ought first to be fairly tested in *bonâ fide* cases of this disease, and under the strictest and most competent supervision. With regard to sponging of the skin, I believe that this is often very useful, and ought to be employed far more frequently than it is at present, in typhoid as well as in other fevers. With proper care it does no harm, while it often gives much relief, and is beneficial in other respects.

"3. The cases in which the more severe methods of applying cold are indi-

cated are those in which the temperature is already very high and remains so, or shows a tendency to rise rapidly, especially if at the same time there are signs of much nervous disturbance. Unquestionably this plan of treatment is not resorted to under these circumstances nearly so frequently as it ought to be. It is difficult to lay down any exact rule as to what temperature indicates the necessity for adopting it, but if it reaches to 106° F. and shows no tendency to fall, or, still more, if it continues to rise, this treatment deserves due consideration. Necessarily much will depend on the actual condition of the patient, and every case must be thoroughly considered in all its features. The best method seems to me decidedly that of placing the patient in a tepid bath, and gradually cooling this. Affusion over the head is useful if there are marked nervous symptoms. Of course it is imperative that this treatment should be always conducted under the strictest supervision, and its effects carefully watched."

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21. *Treatment of the Diarrhœa of Typhoid Fever.*—Dr. George Johnson makes (*Practitioner*, January, 1875) some very sensible remarks on this subject. He says that he has gradually arrived at the conclusion that "in the treatment of typhoid fever careful nursing and feeding are of primary importance, while, as a rule, no medicines of any kind are required, and when not required they are often worse than useless. The result of this change of treatment has been that diarrhœa is a less frequent symptom than formerly, and when it does occur it is far more tractable, while tympanitic distension of the abdomen is a rare event. The mischievous opiate enemata and the torturing turpentine stupes have disappeared together. I believe that one of the main reasons why we have less diarrhœa than formerly is, that we carefully abstain from the employment of irritating drugs of all kinds. As a rule, a fever patient has the 'yellow mixture,' which is simply coloured water; and except an occasional dose of chloral to procure sleep, and a tonic during convalescence, we give no active medicines of any kind. We feed these patients mainly with milk, with the addition of beef-tea and two raw eggs in the twenty-four hours, and we give wine or brandy in quantities varying according to the urgency of the symptoms of exhaustion, especially in the advanced stages of the disease; but in many of the milder cases, and especially in the case of children, we find that no alcoholic stimulants are required from the beginning to the end of the fever, and when not required they are of course best withheld. I have said that we give no irritating drugs of any kind. For a time I adopted the practice which has been strongly recommended, of giving repeated doses of diluted mineral acids. I have long since abandoned this practice, for I am sure that it was injurious, and it was injurious in a very obvious and intelligible way: it irritated the ulcerated mucous membrane of the intestines, it caused pain and griping, and I believe that it often increased the diarrhœa. I have no doubt that the comparative infrequency of the severe and obstinate diarrhœa amongst my enteric fever patients during the last few years is partly attributable to the discontinuance of this mineral-acid treatment. The extreme sensitiveness of the intestinal mucous membrane during the progress of typhoid fever is obvious and indisputable. It is admitted on all hands that the greatest care is required in returning to solid food during convalescence; a want of caution in this respect has often been followed by a return of pain and diarrhœa, an increase of temperature, and not seldom by a decided relapse. If, then, a slice of bread or a morsel of fish can excite such local and general disturbance even after the subsidence of the fever, how improbable is it that repeated doses of an irritating mineral acid can be given without injury during the height of the fever, when the ulceration of the intestines is actively progressing!

"One more hint I wish to give you with regard to the diarrhœa of typhoid fever, which is that in all probability it is often increased by the patient's inability to digest the beef-tea and eggs which are sometimes too abundantly given. When you have reason to suspect that this may be the case I advise you for a few days to keep the patient entirely upon milk, which contains all the elements required for the nutrition of the tissues in a form most easy of digestion. I have had a large experience of the effects of an exclusively milk diet in various forms of disease. In many cases of Bright's disease it is very

efficacious, but one of the inconveniences in some of these cases is its tendency to cause troublesome constipation. In many cases of chronic diarrhœa and dysentery, milk diet will effect a cure without the aid of medicines of any kind. There is now in Twining ward a girl, aged fourteen, who for four months had been suffering from dysenteric diarrhœa, the stools containing much blood and mucus. She was put upon a diet of milk alone, without medicine; within a fortnight the diarrhœa entirely ceased, and she is now convalescent. For the reason, then, that milk has this antilaxative and even constipating effect in various morbid states, it is, when given alone, one of the best antidotes for the diarrhœa of typhoid fever.

"That our treatment of fever cases is not unsuccessful is shown by the results. I find on reference to my case-books, that during the past year, from Nov. 1, 1873, to Oct. 31, 1874, I have had under my care in the hospital twenty-nine cases of fever; fifteen typhoid, and fourteen typhus. Some of the cases have been very severe, but all have been discharged well; not one death has occurred. This very satisfactory result I attribute mainly to the admirable nursing which our patients receive, and to our abstinence from mischievous medication. To only one of these patients was opium given, and that was for the relief of an irritable condition of bowel which remained after a very severe attack of typhoid. A few doses of opium soon put a stop to this, and the patient made a good recovery."

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22. *Treatment of Acute Rheumatism.*—Dr. THOS. S. DOWSE, in a paper read before the Medical Section of British Medical Association (*Brit. Med. Journ.*, Jan. 9, 1875), stated, that it seems to him "that, in the treatment of rheumatic fever, we have, first, to consider the best way to eliminate the acid products of the diseased state; secondly, to relieve pain. Beyond this, the case can be treated as an ordinary one of functional glandular derangement, or febricula; for, when once the sour secretion from the skin is eliminated (no matter how acid the urine might be), the pain subdued, and the temperature influenced, we need have no fear of heart-complication arising. Then comes the question, What are the best means, if there be any, to bring about this condition?

"During the past three years, I have been in the habit of packing most of my cases in a wet blanket, and afterwards rolling them up in dry blankets, so as not only to promote profuse sweating, but also to increase the temperature. This mode of procedure, which I conducted in a very indefinite manner, gave such good results, that I thought carefully over the *rationale* of the system, and at once adopted a course of wet packing after the manner and with the success which I will relate to you. The procedure is simple. The bed is covered with India-rubber sheeting; over this is laid a blanket which has been wrung out of hot water. The patient is then enveloped in the blanket, and covered with six folds of dry blanketing. By this, the temperature is raised and profuse sweating results: the former, if need be, is assisted by the administration of brandy in half-ounce or ounce doses every hour, and the latter by giving freely warm milk and water. If the temperature exceed 102°, then the stimulant is unnecessary. My plan is to continue the treatment for three successive days; namely, for six hours the first day, four the second, and two the third. After the first pack the patient is free, or nearly so, from pain; after the second pack the pain has completely subsided, and after the third pack the sour smell usually disappears. In addition to the relief from pain and subsidence of acid secretions, the pyrexial state, with its attendant symptoms, will be found to decrease in direct ratio, and likewise the pulse. The secretion of urine will become more plentiful, and the urea will diminish in quantity; yet, although the improvement is so marked in reference to pain, sweat, pulse, and temperature, the urine remains acid, and loaded with lithates, and the tongue coated, for some days longer. It not unfrequently happens, especially in young people, when the weather is variable, that transitory pains return in one or more joints; but in almost every instance the pain has been subdued, if not by the first, by the second bath. In reference to cardiac inflammation, I believe that this treatment subdues it more rapidly than any other, rendering the valves less likely to undergo organic change.

"But now comes a very important practical question. There can be no doubt that the packing process produces considerable constitutional disturbance. Under what circumstances should this treatment be adopted, and under what conditions is it not practicable? Every one who has had much to do with this disease must be conscious of the anxiety which it gives him when the temperature exceeds 105° or 106°, and especially when it is associated with the least sign of cerebral disturbance; and, as my treatment consists in elevating the temperature, it will be apparent that some care is necessary. Thus, according to my experience, it should not be adopted—1. If the patient suffer from incompetency of the aortic valves; 2. If there be much fluid in the pericardium from previous inflammation; 3. If the temperature be over 104°; 4. If the skin be hot, dry, and harsh, without the least tendency to sweating; 5. If there be extreme nervous prostration from habits of drunkenness or other vitiating cause; 6. If the patient be pregnant.

"Again: during the time the patient is packed, the following points must be observed: 1. If, after two or three hours, the patient become very restless, with a dry non-perspirable skin, I should advise the treatment to be discontinued; also when the temperature exceeds 105°; 2. If the temperature do not rise, and the patient be sweating freely, give half an ounce, or even an ounce, of brandy every hour in warm milk and water. Thus we have to secure profuse sweating and a mean temperature of 104°; we have to guard against a dry skin and a temperature over 105°.

"Let us consider this a little more practically. If a healthy child be packed for six hours as directed, whose normal temperature is 99°, we find that it will only rise one degree during the whole course of the six hours, and the administration of a stimulant will not cause it to rise any more. It is very different during the pyrexial stage of acute rheumatism, and I have proved most unquestionably that, when the packing alone does not increase the temperature, this is easily brought about by giving brandy in the manner just stated. I have adopted this treatment with excellent results in cases where there has been, in addition to the rheumatic inflammation, a mitral murmur, pericarditis, and pleuropneumonia. In some cases I give medicine; in others I do not. My rule is this: not to give medicine or solid food until after the third packing, and this means not until the acute symptoms have subsided and the temperature is down to 100°; then some vegetable tonic, with solution of acetate of ammonia, is to be preferred to large doses of alkali or quinine. If, however, the case have been of long duration before coming under treatment, and if it be the third or fourth attack, with probably cardiac disease, then of course the orthodox measures must be resorted to for such complications. If the temperature should run very high, with tendency to delirium, I believe the best plan is in every instance, whether under the packing treatment or otherwise, to apply ice to the head, expose the body freely to a current of cold air, and sponge it over lightly with a mixture of one part of spirit to two of water, until the temperature falls; then to discontinue this, and to apply a sinapism to the epigastrium. The following case occurred in my practice, from which a lesson might, perhaps, be learned. A young robust woman, aged 19, came under my care with incipient acute rheumatism, but with a dry harsh skin and a temperature of 102°. I had her packed in the usual manner at 1.30 P. M.; at 4.30 P. M., there was no action of the skin; temperature 104°; at 6.30 P.M., still no action of the skin; temperature 106.2°; rapid action of the heart and tendency to delirium. I at once applied ice to the head; bathed the exposed body with spirit and water, and in twenty minutes I was pleased to find the temperature down to 103°; the following morning it was 101°."

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23. *Cold Baths in Cerebral Rheumatism.*—M. Raynaud reports the case of a very strong, vigorous, and sober man, aged 32, who was attacked by rheumatism affecting many of the joints. Two days afterwards the pains left him entirely, but very serious cerebral symptoms came on; and in two days, when M. Raynaud saw the patient, the pulse was 120 and the rectal temperature 104.9 Fahr. M. Raynaud bled him to more than two pounds, but the temperature and pulse still remained high. M. Raynaud, therefore, ordered cold baths.

One a little above 60 deg. Fahr., was ordered to be given, at 11.28 A. M., to last half an hour. When the patient left the bath, his temperature had fallen to 100 deg. Fahr., his pulse to 76, and consciousness, which had been lost, seemed returning. At 3.30 P. M., the temperature rose to 101.66 Fahr. Another half hour's bath was ordered, during which the exhaustion was considerable. After the bath, the rectal temperature was 97.5 Fahr. At 8.30 P. M., the temperature reached 100.4 deg. Fahr. Another bath was given, after which the rectal temperature was 98.8 deg. At 11 P. M., consciousness returned, and the patient passed the night in quiet sleep. On the succeeding day, three cold baths were given, and were followed by a similar lowering of the temperature. At the end of this day's treatment, the patient had regained his consciousness; asked for drink, and slept quietly. On the third day, he had two baths, and a final bath on the fourth day. From that time, the temperature never exceeded 99.14 deg. Fahr., even in the evening, and convalescence set in decidedly. The cerebral symptoms in this case must be attributed to that meningitic form of cerebral rheumatism characterized by the advent of delirium and coma. But the appearance of the meningitic form, in the author's opinion, is purely symptomatic; for it cannot be supposed that an attack of meningitis could be instantly influenced by a cold bath.—*British Med. Journ.*, from *Journal de Thérapeutique*, No. 22, 1874.

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24. *Herpes Zoster successfully treated with Zinc Phosphide.*—Dr. J. ASHBURTON THOMPSON relates (*Glasgow Med. Journ.*, Oct. 1874) an interesting case of this. He observes that the decomposition of the phosphide of zinc within the body "affords the effects of free phosphorus; in my opinion, ten parts of zinc phosphide are equivalent in therapeutic effect to one part of the uncombined element. The other phosphides and hypophosphites are not ascertained to afford the effects of free phosphorus. This compound, which, given in a dose of one-third of a grain repeated every two or three hours, is, generally speaking, sufficient to remedy such an attack of neuralgia as accompanied the rash in this case, and was therefore employed in it, is not that which appears to me best adapted for the treatment of other forms of skin disease. Many of these attend upon states in which advantage may be gained from the use of cod-liver oil; and, at the same time, that a solution of solid phosphorus in oil is that form which best insures the absorption of the drug in its free and most active state, this fish oil is that one which alone does not expose the element to changes which are either destructive of its remedial powers, or render it dangerous to the patient. These, therefore, are two reasons for employing in such cases a solution of the drug in cod-oil; a third may be found in the fact that such a solution possesses neither the smell nor the taste of the element. Still, patients are found who will not or cannot take the solvent; under these circumstances, no more elegant or effective means of exhibiting phosphorus exists than a concentrated form of the same solution inclosed in little gelatine envelopes forming what are known as '*perles*.'[1] These, it need scarcely be said, are quite tasteless; and if taken immediately after meals, cause little or no phosphoric eructation.

"The dose of phosphorus which may be given with advantage will vary strictly with the object in view. In the example before us, acting on my knowledge of the treatment most desirable in acute neuralgia, it was attempted at once to induce the stimulant action of the drug, by giving full doses of the zinc-phosphide; and this result being obtained, the disease was cured. So, in the eruptive fevers, it is the stimulant effect of the drug which it is desired to produce, and it must be attempted in the same manner—by exhibiting full doses from the beginning of treatment. As a rule, for this purpose I should be inclined to prefer phosphorus in an alcoholic or ethereal solution, given in a dose equal to one twelfth of a grain, and repeated every four hours. But where the object in view is to give tone to the cutaneous vessels, or to improve

[1] Such capsules have been prepared for me by Messrs. Young & Postans, London, containing various doses of the element. I have found them eminently satisfactory.

the general nutrition of the body, a much smaller dose of the element should be employed, and its administration must be continued for long periods. In these cases, if the patient can be persuaded to swallow a large dose of cod-liver oil, he may be allowed to take the thirtieth part of a grain of phosphorus, dissolved in from two to four drachms of it thrice daily. If, however, this amount of the solvent be objected to, or be deemed unnecessary, the 'perles' may be employed. These can be obtained containing the dose named in about four and a half minims of oil; but, if these preparations be employed, I prefer to administer the same dose in a larger number of capsules (containing a more dilute solution), since, by this means, much unpleasant eructation may be avoided, to which the more concentrated solution does give rise, notwithstanding every precaution.

"In this way free phosphorus may be administered for long periods with perfect safety, provided the quantity employed does not exceed one-fourth of a grain *per diem*—an amount which, probably, it will seldom be necessary to employ in the treatment of skin diseases. Nor, except under special circumstances, will it be found necessary to seek any other method of exhibition.

"Thus, although it is possible that with further knowledge of the effects and mode of action of phosphorus in cutaneous disorders, some other more advantageous mode of employing it may be devised, for the present, at all events, I consider that this one fulfils all the necessary conditions of safety and physiological activity. It is in these matters that the pharmaceutical preparation of phosphorus has, until quite recently, failed; and since any imperfection in the preparation employed leads on the one hand to the serious risk of the patient, or, on the other, to disappointment in the result of treatment, probably a knowledge of this method of exhibition will lead to a further and more systematic inquiry into the value of phosphorus as a remedy in chronic skin disorders. The result of treatment with the remedies at present at command is scarcely so satisfactory as to render such an investigation superfluous, while the result of observations hitherto made has, so far as they are reported, been remarkably successful. From a consideration of these notes, and some knowledge of the physiological action of the drug, I scarcely doubt that phosphorus will acquire a just reputation in the treatment of chronic skin diseases not inferior to that at present enjoyed by arsenic."

25. *Subcutaneous Injection of Strychnia in Diphtheritic Paralysis.*—In the *Deutsches Archiv für Klinische Medicin* for 1874, Dr. Acker relates some cases of diphtheritic paralysis. In one of them, the patient, a man aged 38, had complete paralysis of both the external and internal branches of the superior laryngeal nerve. Not only was there complete loss of sensation in the upper cavity of the larynx and paralysis of the external branch supplying the crico-thyroid muscles, but also of the fibres of the internal branch which supply the thyro- and the arytæno-epiglottic and arytenoideus transversus muscles. The author believes that this peculiar affection of the superior laryngeal nerve is to be explained by the course which it takes along the middle constrictor of the pharynx, whereby the morbid process affected it by local influence, just as it produces paralysis of the nerves of the palate and œsophagus. In the case referred to, there was disturbance of co-ordination of the muscles in walking, and the paralysis of sensation and motion was most marked on the right side. The patient had also impairment of the sense of touch. The application of galvanism along the spine, along with hypodermic injection of strychnia, produced so much improvement, that Dr. Acker was led to specially examine the action of strychnia in such cases. It was used in the form of a solution containing 2 per cent.; and within four weeks 0.4 *gramme* (three-fifths of a grain) was injected into a man. Of the beneficial action of this treatment, Dr. Acker specially convinced himself in the case of a woman, aged 36, with complete paraplegia.—*Brit. Med. Journ.*, Jan. 30, from *Centralblatt*, No. 57, 1874.

26. *Observations on Erysipelas.*—The following observations by Dr. W. Lukomsky on erysipelas are of great interest and importance, and as they were made under the eye of Recklinghausen, at Strasburg, we can have great con-

fidence in their accuracy. They are divided into two sets, in the first of which the results of the observation in nine cases of erysipelas are given, and in the second a number of experiments on animals, and the conclusions deduced, are recorded. His general conclusion is, that there is a connection between erysipelas and the low organisms which the author calls micrococci. Their quantity and the rapidity of the spread of the disease were in direct ratio. The micrococci are minute globular bodies occurring in immense numbers, and distinguished from bacteria by the latter being rod-shaped. In his nine cases in the human subject he finds, that, wherever the erysipelas is recent and progressing, the micrococci are in abundance in the lymphatic vessels and serous canals (Lymphcanalicula—Saftkanälchen). When the process was retrograding or stationary, there were no micrococci, although the inflammation might be more intense. His experiments on animals were made partly by injecting fluid from erysipelatous parts under the skin of closely shaven rabbits, and partly by applying such fluids to open wounds. In the former case a rapidly extending phlegmonous inflammation of the subcutaneous areolar tissue was produced, and in the part affected the micrococci increased very rapidly, and developed in enormous numbers in the serous canals and lymphatic vessels. In the second set of experiments a violent inflammation of the neighbourhood of the wound was produced, which extended rapidly to the skin, where it could not be distinguished from erysipelas. In these cases, too, micrococci were found in abundance, chiefly at the periphery of the inflamed area, and where the inflammation was advancing, the micrococci passed from the wound into the serous canals, and thence into the lymphatic vessels. It is not easy to say how they are carried in, but that they are so there seems to be no doubt. It is also difficult to see how they disappear, but it is noted that even before the inflammation has disappeared they have gone, and they are to be found almost alone in the parts where the disease is actually advancing. It is also noted that these experiments prove the connection between the serous canals and lymphatic vessels, which was asserted by Recklinghausen, but has since been denied by some. Among the author's nine cases there is one in which the erysipelas occurred without any external wound, but in this case the micrococci were found just as in the others. The observations are illustrated by some excellent sketches.—*Glasgow Med. Journ.*, Oct. 1874, from *Virchow's Archiv*, vol. lx.

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27. *Putrid Poisons, Septicæmia, etc.*—Dr. P. L. PANUM, of Copenhagen, discusses the question whether the symptoms which undoubtedly result from the introduction of putrid substances into the body, are due to the existence in these substances of certain active organisms (chiefly the Bacterium termo of Cohn), or to some poison, possibly related in its production to these organisms. He comes to the conclusion that in decomposing substances there is a definite chemical poison which, in its composition, is more related to the vegetable alkaloids than to albuminous substances. This substance probably consists of several poisonous matters, it is not destroyed by boiling, is soluble in water, but precipitated by strong alcohol. The poison is probably produced by the vital processes of the bacterium, and may be either a secretion of this organism, or a product of the decomposition of albumen. He comes to these conclusions on what appear to be sufficient grounds. If a putrid solution be boiled for eleven hours, or filtered several times till it is perfectly clear and free from bacteria, it still produces the symptoms of putrid poisoning. Or, if the fluid be evaporated to dryness, and the residue extracted, first with alcohol and then with water, the alcoholic extract does not produce the symptoms, while the watery does. The bacteria which produce this poison exist in the mouth and intestine of man, and very probably pass occasionally into the blood and tissues, but in these they seem incapable of living, till a certain time after the death of their host. In the intestine they probably produce the putrid poison, but the mucous membrane seems incapable of absorbing it, this being parallel to the fact that curare is not absorbed by the intestines. On the other hand, the putrid poison is often absorbed from the surface of wounds, and the characteristic symptoms are produced (septicæmia). It seems that this putrid

infection is not inoculable. It should, however, be noted that there is, according to some, a disease which depends on the existence in the blood of a distinct organism, an organism different from the bacterium termo, and which has been named by Klebs the Mikrosporon septicum. This organism seems, under certain special circumstances, when its germs exist in the air (specially in crowded hospitals), or when it is carried from one patient to another, to be able to exist in the blood and tissues, and increase there. It produces serious inflammations and suppurations in the parts to which it is carried; in fact, it is the active agent in the production of pyæmia. In many cases there will be the combination of the putrid poison with this active organism, and in these cases the symptoms will be partly pyæmic and partly septic in character. The author at the end of his paper suggests that greater care should be exercised in using terms in describing the conditions treated of. Septicæmia, if used at all, should be confined to the symptoms produced by the putrid poison. It seems that from this putrid poison, which is a composite substance, it is possible to separate a definite substance, "sepsin," and its introduction into a living animal produces symptoms. But this should not be called septicæmia, but rather sepsin-poisoning, and it would even be better to speak of putrid-poisoning when referring to the *whole* poison, than of scepticæmia, a word which is somewhat indefinitely used.—*Glasgow Med. Journ.*, Oct. 1874, from *Ibid.*

28. *Investigations on Lupus*, by Dr. C. Friedlander.—The observations in this paper are of great interest to the histologist, and also indirectly to others. The subject of investigation is the exact nature of the growth which occurs in the skin in lupus. We all know that lupus presents itself primarily in the form of small nodules, and that while these nodules ulcerate or cicatrize, the disease spreads by the formation of fresh crops of nodules at the periphery. The important matter, of course, is the nature of these nodules of which the affection primarily consists. Virchow and his followers consider them to be of the structure of granulation tissue, and that author classes lupus among his granulation-tissue growths. Rindfleisch has described the nodules as if they were related to the sebaceous glands, and considers that the disease is one primarily of these glands. His views, however, have not been confirmed, and the present observations are opposed to them. The author so far agrees with Virchow that he finds in lupus a very great infiltration of the true skin with round cells like those of granulations. But in the midst of these infiltrations he finds structures which seem to have hitherto escaped observation, but to which great importance is attached. These are numerous very small globular growths composed of cells larger than those of granulation tissue. In the centre of these minute nodules there are always one or more giant cells. Similar structures are found in neighbouring lymphatic glands, which to the naked eye present the usual appearances of scrofulous glands. Now, the author agrees with the views recently enunciated by Schüppel as to the structure of tubercular growths, and the nature of the scrofulous affection of the lymphatic glands (see this Journal for 1873, p. 413), and he identifies these little growths in the midst of the infiltrated skin in lupus, and in the neighbouring lymphatic glands as tubercular nodules. He, therefore, looks on lupus as a local tuberculosis, and compares it with the same disease in the brain, joints, testis, kidney, etc. These minute globular bodies fulfil the three criteria of tubercles—1, they are in the form of numerous globular nodules; 2, they have the structure of tubercular nodules, including non-vascularity; 3, they present a similar tendency to degenerate.—*Glasgow Med. Journ.*, Oct. 1874, from *Virchow's Archiv*, vol. lx.

SURGICAL PATHOLOGY AND THERAPEUTICS, AND OPERATIVE SURGERY.

29. *Aneurism of the Innominate Artery treated by Ligature of the Common Carotid and Subclavian Arteries simultaneously.*—Mr. Frederick Ensor, Surgeon to Port Elizabeth Hospital, South Africa, reports (*Lancet*,

Feb. 6, 1875) the case of a Hottentot on whom he operated on the 8th of Sept. last, for what he supposed to be a dilated arch of the aorta, with a second dilatation in the arteria innominata, by placing a ligature on the common carotid artery just below the omohyoid muscle, and on the subclavian as it crosses the first rib. "Taking the cricoid cartilage as a centre, I made an incision as nearly as possible an inch and a half on each side of it, on the border of the sterno-mastoid muscles. The anterior jugular, prominent and full, had to be carefully avoided, and also a network of veins which presented themselves low down in the wound. Anxiety to prevent the obscuring of parts by venous blood caused me to be longer than I anticipated in opening the sheath over the artery just at the lower edge of the omohyoid muscles. The artery being cleared by the director, I had no difficulty in passing the needle carrying a silk ligature under it. The cutting off of so large a supply of blood from the brain had no perceptible effect on the patient. Without allowing him to emerge from the effect of the chloroform, which he took kindly, there being no embarrassment of heart or lungs, I pulled his right arm well down over the side, and fastened it by the wrist to the leg of the table. This effectually kept the shoulder down without an assistant being in the way. Making the usual incision from the anterior border of the trapezius to the edge of the sterno-mastoid muscle, I cut a small artery, which was the only one which was severed in either operation; its jet stopped without a ligature; the little venous hemorrhage, which temporarily obscured the outer edge of the wound, was quickly sponged up, and ceased to trouble. The external jugular, large and gorged by transverse veins joining it, came into view as the retracted skin sprang into its place above the clavicle. The deep fascia was freely opened on a director, the vein held to the inner side by retractor. The finger, passed into the wound, came at once against the border of the scalenus anticus and its insertion into the tubercle of the first rib, and the subclavian artery felt distinctly throbbing under the finger. Freeing its communication with the brachial nerve and loose tissue all around, the needle, armed as before, was without any difficulty passed under the vessel, the silk tied, shutting up the radial pulse. Both wounds were next closed with wire suture, and dressed with carbolic acid lotion and oiled silk.

"The ligature of the subclavian was accomplished in a few minutes, and seemed to me a much easier affair than that of the carotid. In the present instance the carotid lay deep, on account of the shortness of the man's neck and the bulk of the sterno-mastoid muscle. The engorged venous network was also a cause of more than ordinary care and consequent time spent in manipulation.

"Before removal to his bed the man spoke intelligently, and his pulse was 82. In the evening, feeling restless, he was ordered thirty minims of solution of morphia."

Under date of Oct. 20th Mr. Enson states that the operation may be considered to have done good. The patient has not so much pain as he had at the end of August. He makes no complaint of pain in the chest; his respiration is quiet; he can swallow semi-fluid food without pain or difficulty. The upper border of sternum and right sterno-clavicular articulation is not more prominent. The bruit is softer; the impulse is less. On the other hand, the tumour is rising in the neck, and he has some symptoms of pressure on the œsophagus and larynx. In the conduct of the case it is worthy of note how the aconite commanded the heart's impulse. The man sleeps well, enjoys his food, is in no particular distress, and is able to go about gently, but cannot make any exertion without embarrassment of the breathing.

The ultimate result of the case Mr. Enson promises to publish so soon as it becomes known.

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30. *Treatment of Varix by Injection of Chloral.*—Dr. PARONA describes ten cases of varix of the leg, treated in the hospital at Novara, by the injection of hydrate of chloral. He draws the following conclusions from his cases and from those which have been elsewhere published. 1. The treatment of varix by hydrate of chloral has, up to the present time, been sufficiently harmless. 2. In

the majority of cases, the result of the operation is permanent and complete closure of the varicose veins, with an insignificant amount of reaction. 3. If a coagulum be not formed, the operation may be repeated in a few days without inconvenience. 4. The operation is very rarely followed by phlebitis, suppuration, ulceration, or the escape of coagula. 5. Sloughing of the skin on the point of puncture occurs rarely, and is not severe; it depends on want of skill or of care on the part of the operator. 6. The operation is rather painful, and the ulcers generally cicatrize rapidly after the veins have become obliterated. *Lond. Med. Record*, Jan. 20, 1875, from *Gazetta Medica Italiana-Lombardia*, Dec. 12, 1874.

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31. *Operation for the Destruction of Varicose Veins.*—Mr. Chas. Steele, Surgeon to the Bristol Royal Infirmary, describes (*British Med. Journ.*, Jan. 30, 1875) the following method he employs for this purpose. In an ordinary case his plan is "to isolate the main vein or veins below the knee, compress above to define the vessel, make an incision at right angles to its axis, dissect out the vein without picking it, seize firmly with torsion-forceps, and drag out as much as possible, which seldom amounts to an inch, and cut off the piece as close to the skin as possible at both ends. I pass a probe through the removed piece, to be sure that the entire calibre is secured. The vein in the leg is emptied of blood by pressure; if it do not refill, I am satisfied; if it do, I remove portions which are prominent below. A horsehair suture in the wound, a compress of cotton-wool and firm bandage complete the operation. After trying several dressings, I prefer the simple cotton-wool, as it soaks up blood and forms a good protection, which drops off like a scab, if healing by the first intention occur, and comes off easily, from becoming moist, if suppuration take place."

He reports several cases successfully operated on by this method.

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32. *Laparotomy as a Remedy in cases of Intussusception.*—Mr. Hutchinson exhibited, at a late meeting of the Pathological Society of London (*Lancet*, Dec. 19, 1874), a specimen of intussusception from a dog. The dog had only slight symptoms for eight days before death; there were no motions, and no blood passed; vomiting occurred once. Intense jaundice occurred two days before death. The small intestine and cæcum had passed into the colon for about eight inches, nearly reaching the anus. There was no peritonitis, and the intussusception was easily reducible. The question was whether operation would have been desirable in such a case.—Dr. Hilton Fagge related two extremely interesting and important cases of operation in which the intestine was replaced during life. The first was that of a woman who had been seized ten days before seen with severe pain in the abdomen, which continued, and was followed in a few days by the occurrence of a tumour in the right iliac fossa. When seen by Dr. Fagge, two days later, there was an ill-defined swelling in the *left* iliac fossa, on manipulation of which severe pain occurred, and it became more distinct. There was no constipation, and only slight sickness. The diagnosis of intussusception having been made, inflation was tried, which had the effect of removing the tumour from the iliac fossa to the umbilicus. A second trial of inflation not having any good effect, it was decided to operate, and the abdomen was opened under chloroform, and the ileum, which was invaginated, withdrawn from the cæcum. No bad symptom ensued, and the recovery was rapid. The second was one brought into Guy's Hospital in a state of collapse with symptoms of sudden internal strangulation. An exploratory operation discovered a small intussusception, which was reduced, but the patient died of the collapse in two or three hours after the operation.—Dr. Hare mentioned a case of intussusception, in which there was a good deal of hemorrhage, and after death the peritoneal surfaces were so firmly united by adhesion that reduction was impossible. He thought there were two distinct classes of cases, and in a case such as his any attempt at reduction during life would fail. Dr. Goodhart related a similar case.—Dr. Leared mentioned a case in which reduction after death was easy.—Dr. Douglas Powell pointed out that it is not easy to produce peritonitis in the dog, hence

Mr. Hutchinson's case had less value in its bearing on the question of operation in man.—Mr. HUTCHINSON, in reply, agreed that this was the case.

33. *Amputation through Joints without interfering with the Proximal Bone.*—Dr. GEO. H. B. MACLEOD, Regius Prof. Surg. Univ. of Glasgow, advocates (*Glasgow Med. Journ.*, Oct. 1874) a modification of the usual practice in amputation through joints, which consists in leaving, in every case in which it can be done, the proximal bone with its incrusting cartilage untouched in the stump. The advantages he claims for this are that "exarticulation is quicker, easier, requires simpler instruments, and is attended with far less bleeding (from our having to deal, as a rule, with the main arterial trunk), than amputation in the continuity. By not touching the cartilage we can keep further from the trunk, have a longer stump, and not expose the very vascular and, hence, very absorbent end of the long proximal bone.

"There are here very great and important benefits which need not be enlarged upon. The risks of septicæmia and osteo-myelitis are reduced to the lowest attainable point as the bone (the chief agent of absorption in stumps) remains sealed. Operations thus performed are attended with much less shock—the integuments preserved are, as a rule, those best fitted for withstanding pressure—there is vastly less risk of injury to the flaps and bloodvessels and nerves by the action of the unsawn bone acting on them, and hence we need not fear protrusion or pain subsequently—we are less apt to be troubled by the retraction of the muscles, as their close adhesion to the bone down to its end is not weakened—the power of sustaining the pressure of apparatus is much earlier acquired, and the point of support is broader and better fitted for pressure than when the bone has been divided. If to this we add that the anastomosis of the bloodvessels in such flaps is very quickly established from the large supply of twigs on the level with joints—that we have no bleeding from the bone to deal with or dread, and that a false limb can with perfect success be fitted so as to retain the joint motion with a stump of the natural length, all the leading advantages of the mode of operating dealt with will have been stated, and it must be allowed that such advantages are neither few nor inconsiderable.

"Of course, we cannot amputate through a joint the seat of malignant disease; but it is in secondary amputations for accident that the most marked good is obtained, and it is in such cases that the great dangers of septicæmia and osteo-myelitis are apt to arise.

"It may be further added that the redundant size of the articulating head of the bone, which is in some cases left in the stump, in time disappears, and it becomes beautifully rounded and well adapted for the end of a stump."

34. *Penetrating Wounds of the Knee.*—M. GAYET, Surgeon of, the Hôtel-Dieu at Lyons, on the strength of eight cases treated in that hospital, arrives at the following conclusion: 1. A penetrating wound of the knee-joint, made by a pointed instrument, and unattended by complications, is without danger, providing it be allowed to cicatrize in a state of rest and immobility. 2. The same wound may give rise to the most dangerous arthritis when not properly attended to. 3. The danger of arthritis is in direct proportion to the extent of the wound and the difficulties which impede its union by the first intention. 4. The complications dependent upon injuries of the bones are extremely serious; but fractures of the patella, however complicated they may be, need not, if they exist alone, lead to amputation or excision. 5. The presence of foreign bodies, however small these may be, induces arthritis and its possible consequences, and demands amputation or excision. 6. All things being alike, posterior wounds seem more serious than anterior ones, by reason of the density of, and number of the tissues concerned, the presence of vessels, etc. 7. These conclusions having been deduced from observations made in a hospital—*i.e.*, in a medium little favourable to conservative surgery—they may be regarded as more favourable when applied to media of a more healthy character.—*Med. Times and Gaz.*, Jan. 30, 1875, from *Lyon Médical*.

35. *Suppurating Ovarian Cysts.*—Mr. Thos. Keith states (*Edinburgh Med. Journ.*, Feb. 1875) that operation ought to be the rule of practice in cases of acute suppurating cysts, or when typhoid symptoms come on after tapping. He has met with eleven cases of acute suppurating cyst, besides two chronic cases. "In all these," he says, "save one, the chance of ovariotomy was given, however hopeless-looking the case might be. In the exceptional case, ovariotomy would also have been performed, had it been possible to remove the patient from her poor home and unfavourable surroundings. She was seen with Dr. Menzies on the third day after her fourth confinement. He had been called to her for the first time only the day before. A large ovarian cyst had existed with at least two of her pregnancies. The distension was so enormous that urgent dyspnœa had to be relieved at once by tapping. Upwards of six gallons of fluid containing much blood and pus were got away, and ovariotomy was agreed on as soon as she could bear removal. This could not be accomplished, and after three weeks, tapping was again had recourse to. This time the pus was intensely putrid, and as the canula got choked with pieces of fetid lymph, an incision sufficient to admit two fingers was made into the cyst, and its putrid contents thoroughly cleared out. Fortunately the cyst was single; a perfect recovery took place, and this patient had two children since. None but the strongest of women could have borne the exhausting suppuration that went on for nearly four months. Pulse and temperature remained high, and of at least six weeks of her illness she has now almost no remembrance. Recovery in such circumstances must be rare; yet it may be well to note, that during the whole time she was supported entirely on milk and butter-milk, and had no stimulants whatever; neither was there any washing out of the cyst.

"Of the ten more or less acute cases operated on, eight recovered, while the two chronic cases got well easily." He relates a series of seven of his acute cases which occurred in the course of his second hundred operations, for ovarian tumours, six of which recovered.

"In all the acute cases, there was pain or tenderness somewhere on pressure. In all, the pulse was rapid and feeble; exhaustion and emaciation were great.

"As a rule, there was increase of temperature to a very great degree. This varied from 100° to 102° in the morning, to 103° or even 105° by evening. In all cases where the temperature was very high, there was a fall of several degrees within a very few hours after operation.

"But two cases, and these were the most hopeless-looking of the whole number, were remarkable on account of the extreme lowness of temperature. In the third case, the temperature at the time of operation was only 95.5°. This is the more unusual from the circumstance that the contents of the cyst were intensely putrid. For some days before operation, there was a steadily rising pulse, and a steadily falling temperature. In the sixth case, where a suppurating cyst had burst into the peritoneum, the temperature at the time the patient was operated on, was 97°. In both of these, the temperature rose within six hours after removal of the tumours; in one case from 95.5° to 97°; and in the other from 97° to 100.5°.

"In one of the acute, and in one of the chronic cases, there was no adhesion. In the others, adhesions were of the gravest nature, and the operations were tedious and severe.

"In five cases the pedicle was treated by the clamp; in five by the cautery. One death followed each method. Death took place about sixty hours after operation from blood-poisoning. Both were looked upon as most unfavourable subjects for ovariotomy. In one, the chances were guessed at as twenty to one against the patient; while in the other, some of my friends remonstrated with me as to doing the operation at all.

"In only two, did typhoid symptoms come on quickly after tapping, and in one case, tapping was had recourse to in the hope of relieving pain set up by a long journey to town. Five had not been tapped, and in the others no symptoms of distress appeared within less than five weeks after it. The simple tapping had probably little or nothing to do with the after suppuration. The usually received opinion, therefore, that suppuration in ovarian cysts is almost always the consequence of some interference, requires modification. So does the

statement that when there is pain or tenderness this generally arises from inflammation of the peritoneal surfaces; the reverse is oftener the case. Tenderness or pain, if long continued, is almost always a certain sign that irritation is going on in the tumour somewhere. Simple surface tenderness, causing surface adhesion, rarely lasts long; and the worst cases of adhesion met with have often no history, either of pain or tenderness. . . . .

"The extreme feebleness of pulse, and depression of the vital powers, which all cases of acute suppurating cyst present, must not deter one from operating. Hopeless without interference, they are not the unfavourable cases for operation that they seem, or, judging from the small number of reported successful results, have hitherto been regarded."

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36. *Hydrostatic Injection of the Bladder.*—Prof. ZEISSL, of the Vienna General Hospital, has just published an interesting paper on this subject. He observes that one of the most frequent complications of gonorrhœa, especially in the male sex, is a catarrhal inflammation of the bladder. It is, in fact, a complication and not a sequence, being much more frequently met with during the acute stage of the urethral affection than when that has subsided. Among the occasional causes which may lead to the extension of the urethral inflammation to the bladder may be ill-timed or unskilful catheterism, the improper use of injections, and the administration of too large doses of balsamic medicines, of digitalis, or cantharides. He has met with many cases in which injections of red wine or concentrated solution of tannin at the commencement of gonorrhœa have given rise to this affection of the bladder. The objection that red wine could not act mischievously on the urethra, when it excites no irritation on the mucous membrane of the mouth or stomach, can only be raised by those who are unaware of the varieties of sensibility in the various mucous membranes. The urethral mucous membrane at its most anterior and its most posterior portions is incomparably more sensitive than the membrane of the eyelids and the eye. Fluids which scarcely affect these parts irritate the normal, and still more the diseased, urethra to such an extent as to induce tenesmus and dysuria. The tenesmus of the neck of the bladder is soon accompanied by effusion of blood from a mucous membrane so abundantly supplied with capillaries. When a few drops of blood are first observed at the end of each voiding of the urine, the cystitis is just commencing, and if the irritation be continued may soon go on to true hæmaturia. With the increased hæmaturia also there is great dysuria, the patient being obliged to discharge a small quantity of urine every few minutes. Under spasmodic action of the sphincter of the bladder, a small quantity of turbid mucous urine is forced out, and is followed by some bright red drops of blood. When the urine remains for ten or fifteen minutes in contact with the catarrhal mucous membrane of the bladder, the blood that is suspended in it becomes coagulated into smaller or larger clots. These coagula, in fact, are the chief proof that we have to do with a commencing hæmaturia vesicæ, as in renal hæmaturia the blood, which is mixed with urine, is never exhibited in the form of clots.

As a general rule, vesical hemorrhage in gonorrhœa only continues for a few days. Sometimes, however, it becomes so considerable that the urine is coloured intensely by the coagula; and in some cases the hemorrhage may be such as to cause great debility and endanger the patient's health. In order to allay this, the patient must be kept in a state of absolute rest, while cold applications should be made to the hypogastric and sacral regions, and to the perineum. If these means do not suffice, internal hæmostatics, such as a solution of alum and perchloride of iron, may be employed; and when these too have failed, it has been hitherto the practice to inject the bladder through a catheter with cold water or astringent fluids. Although in many cases these injections may have exerted a favourable influence, yet they not infrequently give rise to mischief of another kind. The introduction of even so soft an instrument as Nélaton's catheter several times daily into the bladder not infrequently causes irritation, so that inflammation of one or both of the vasa deferentia, epididymitis, or prostatis result, compelling abandonment of this procedure. It becomes, therefore, very desirable that some means should be devised

for injecting fluids into the bladder without the introduction of a catheter. Of late, high hydrostatic pressure has been frequently employed for the injection of cold water into the intestinal canal for the purpose of overcoming obstinate constipation; and Hegar has employed his apparatus (which consists in a funnel with an elastic tube, to which a catheter is attached) for injecting the bladder in women. The object is, however, to dispense with the introduction of the catheter into the urethra, and this Prof. Zeissl accomplishes in the following manner: He provides himself with one of Esmarch's irrigators (for which, indeed, the funnel used by Hegar might be substituted), and the patient is placed on his back, with the buttocks raised. Cold water or an astringent fluid is placed in the receptacle of the irrigator, which is either held up as high as possible by an assistant or fixed at the desired elevation. The operator then, keeping the penis with his left hand against the abdomen, directs the pipe of the irrigator into the ostium cutaneum urethræ. The fluid thus passes into the bladder by mere hydrostatic pressure, the patient, after a few minutes, perceiving with a great sense of comfort that it is entering the organ. In this way from four to eight ounces of the fluid may be injected into the bladder, not only without any ill effect being produced, but, on the contrary, to the great comfort of the patient and to the relief of his malady.—*Med. Times and Gaz.*, Jan. 30, 1875, from *Wiener Med. Woch.*, Dec. 19 and 26.

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37. *Spasm or Tenesmus of the Muscular Portion of the Urethra and Neck of the Bladder cured by Cystotomy.*—M. Parona, Surgeon to Novare Hospital, assisted M. Bottini a short time since when the latter surgeon performed subcutaneous incision of the neck of the bladder in a case similar to the one about to be related. Although in Bottini's case the patient did not remain long without a return of the symptoms, M. Parona determined in his case to adopt a somewhat similar plan, but to be more energetic in his treatment. In July, 1873, a young man of good constitution, æt. 22, consulted him, and stated that since a gonorrhœa contracted at the age of fifteen he had been suffering. He was advised to enter the hospital at Novare, and M. Parona recognized most of the symptoms which he had observed in Bottini's case—viz., no discharge, vesical irritation, painful contractions at neck of bladder during micturition, irregular jerky stream, urine normal and without parasites, catheterism easy in the greater part of the urethra, but possible only at the region of the neck when the resistance was tired out, bladder healthy. M. Parona arrived by the method of exclusion at the diagnosis of "spasm or tenesmus of the muscular portion of the urethra at neck of bladder." He first tried antispasmodics—bromide of potassium, belladonna rubbed into the perineum, chloral, morphia, and then forced dilatation of the neck of the bladder—but without success. He then hesitated between intra-urethral section of the neck of the bladder and cystotomy, and decided on the latter for the following reasons:—

1. In incising the neck with Mercier's instrument one runs the risk of not cutting enough of the muscular fibres and of not obtaining a permanent cure, as in Bottini's case.

2. This operation exposes the patient to the dangers of hemorrhage, of accumulation of blood in the bladder, of infiltration of urine in the wound, and its absorption may lead to the most disastrous consequences.

3. It is difficult with Mercier's instrument to divide the membranous urethra, which participates in the alteration at the neck and necessitates the same treatment.

4. In the history of surgery one finds many cases of cystotomy followed by permanent cure. Miche-Ange Aasson relates a case of a woman who suffered from a vesical neuropathy which was taken for a vesical calculus and was cured by cystotomy. Roux relates an instance in which he did lithotomy on one of his confrères and found no stone, but the patient recovered rapidly from the operation and the symptoms vanished. The celebrated Medoro, surgeon of Padua, relates a similar case, and others are reported by Borsiori, Ucelli, Velpeau, and Dolbeau, who, in his *Leçons de Clinique Chirurgicale*, does not hesitate to recommend this treatment for the spasmodic affections of the neck of the bladder, arguing from the happy effects which follow incision in affections

of a similar nature of the rectal sphincter. (If we mistake not, Mr. T. Holmes and Mr. Bickersteth (of Liverpool) have reported similar cases, and the latter surgeon suggested opening the bladder by the lateral method in painful bladder affections.) (See 1st No. of *Liverpool Hospital Reports*.) Mr. Bryant has recently adopted this plan.

Convinced by these facts M. Parona determined on cystotomy, and on 24th October operated in the following manner: Median incision into urethra, introduction of Dupuytren as for lithotomy, large *débridement* of the neck of the bladder. In a month the patient was well and free from his former sufferings.

M. Parona makes the following concluding remarks:—

1. Palliative means, which one should always try, are in a great number of cases absolutely inefficacious.

2. The surest treatment is incision of the neck of the bladder.

3. Cystotomy should be preferred to intra-urethral section.—*Brit. and For. Med.-Chir. Rev.*, Jan. 1875.

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38. *Subcutaneous Urethrotomy.*—Mr. TEEVAN exhibited to the Clinical Society a patient, aged thirty-one, upon whom he had performed this operation. The man had suffered from a severe stricture for seven years. Six years ago he had some form of extravasation, which necessitated his entry into Charing-Cross Hospital, where the abscess was opened and a catheter passed into the bladder. Three years ago he came under Mr. Teevan's care for a tight stricture, complicated with a fistula and occasional attacks of retention. By gradual dilatation with soft bougies, the stricture was enlarged to 7, English gauge, and the fistula cured. As dilatation could not be carried beyond the size mentioned, the patient was taught to pass a No. 5 bougie for himself, inasmuch as a larger instrument always set up irritation and made him worse. After three years' absence, the man again came under Mr. Teevan's care last October, complaining that, for the three years he had been away, he had never gone longer than three days without an attack of retention, and was often obliged to pass the bougie six times a day. It was clear, then, that the bladder was not at fault, for a bougie always sufficed to relieve the retention. Continuous dilatation, and various remedial measures having utterly failed to cure the patient of his repeated attacks of retention, Mr. Teevan, on November 16, subcutaneously divided the stricture, which was situated in the centre of the perineum, and was three-fourths of an inch long, on a grooved catheter-staff, with a sliding catheter. A fine tenotome was used for the operation. The shoulder of the sliding staff having been clearly made out, the skin was pierced in the raphé of the perineum, and the tenotome inserted into the slit in the catheter-staff and run along to its end; the mucous membrane and stricture being afterwards divided with a sawing movement. No anæsthetic was given, and not more than a dessertspoonful of blood was lost. The urine drawn off was very slightly tinged with blood. Mr. Teevan apprehended the patient would have rigors, as he had previously been attacked with them, and he therefore tied in the elastic catheter and gave the patient ten-grain doses of quinia just to demonstrate the inutility of those stock remedies, and to show that American surgeons were right in their views regarding the retention of a catheter after operation. Twenty hours afterwards, a rigor occurred, and the catheter was withdrawn. The puncture was healed in forty-eight hours. The after-treatment consisted in passing a large olivary elastic catheter every third day, and the patient left St. Peter's Hospital quite well on December 3, holding his water for six hours, passing a good stream, and not having had an attack of retention since the operation. Mr. Teevan remarked that the case imperatively called for operation, as the patient could not follow his avocation. He had selected this particular operation as he considered it specially indicated in the present instance. External urethrotomy would have been a severe procedure, as there was neither abscess nor fistula. He discarded the splitting operation, as that method was the most fatal of all urethral operations, and was followed by speedy and aggravated relapses. There remained, then, only internal urethrotomy and subcutaneous section, and he preferred the latter, as he

knew he could by it completely divide the stricture, which encased the urethra like an iron hoop. He stated that he believed he was the first surgeon who had ever divided a stricture in this country on a catheter-staff, with a slit in it for the knife to run along. He drew attention to the fact that scarcely any scar was visible at the point of operation.

In answer to some remarks, Mr. Teevan said he was confident that the man would have a relapse unless an instrument were passed from time to time. In all cases of stricture, relapses occurred after every operation, unless the dilatation was kept up by the passage of an instrument from time to time. He could now, at the end of a month, pass as large a catheter as before the operation; the period of relapse was more deferred than with other operative methods; the operation also occasioned the minimum amount of danger. Sir W. Fergusson, he believed, had never used a catheter-staff with a slit in its convexity for the knife to run in. The great advantage of the catheter-staff was, that it drew off the urine before the operation, so that the operator knew beforehand that he was cutting in the right direction. The instrument was first used in New York, but the literature of this country did not mention it. The wound was to all intents subcutaneous, for, although a small puncture was made with the tenotome in the skin of the perineum, and the instrument then divided the mucous membrane and stricture together, yet, immediately upon its withdrawal, the external opening was closed with lint, and at once healed. Infiltration might occur after any urethral operation, but it was almost unheard of. He had tied in a catheter simply to show that it would not prevent rigors.—*Med. Times and Gaz.*, Jan. 23, 1875.

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39. *Diffuse Phlegmonous Periostitis.*—At a recent meeting of the French Academy of Medicine, M. Giraldès read a paper "On the Treatment of Diffuse Phlegmonous Periostitis." He is desirous, he says, of drawing attention to certain points in the treatment of this severe affection, which is especially met with in children and adolescents of the poor. Well described formerly by Schutzenberger, of Strasburg, it seems to be very imperfectly known at the present day. Under the designations of "subperiosteal abscess," "juxta-epiphysic osteitis," "detachment of the epiphyses," and "diffused osteomyelitis," surgeons have only been describing the terminal phases of one and the same disease, and confusing the history of the affection. Referring to Schutzenberger's memoir for the complete account of the disease, M. Giraldès only alludes to those of its features which illustrate the value of the communication he is making:—

"Diffuse phlegmonous periostitis is an affection which commences in a very acute form, being preceded by severe pains at a point of the segment of a lower, and sometimes of an upper limb, and accompanied by an elevation of temperature which oscillates between 39° and 42° C. The assemblage of symptoms is such that frequently it has been mistaken for the commencement of a bad typhoid fever or hyperacute rheumatism. The evolution of the disease is so rapid that it soon terminates in suppuration, and vast purulent collections occupy the points of the limb which were the seat of the severe precursory pains. The inflamed periosteum, the origin of this suppuration, becomes detached from the bony diaphysis, carrying away with it the osteo-plastic layer which is concerned in the growth and reproduction of bone—leaving the diaphysis of the bone denuded, sometimes throughout its entre extent. The bone thus deprived of its nutritive membrane becomes necrosed, its medulla inflaming and suppurating, and its epiphysic cartilages undergoing softening. These various alterations are only the consequence of the same morbid process, and they have been wrongfully regarded and described as being the point of departure or primary seat of the disease.

"These vast purulent collections urgently demand surgical intervention; but whether they are evacuated by means of large incisions, or by drainage as recommended by M. Chassaignac, a necrosed bone remains at the bottom, keeping up suppuration. Around this diseased bone the periosteum readily ossifies, forming a bony sheath around the necrosis, constituting what is termed in surgery an invaginated necrosis. This, at a later period, has to be opened

either by the gouge or trephine for the removal of the necrosed bone and the cure of the fistulæ which are exhausting the young subjects of the disease. Until the year 1865 I treated by this procedure all the cases which came under my observation; but at that time Prof. Holmes published in the *Lancet* (for April, 1865) a case of diffused phlegmonous periostitis of the leg, in which, after having opened the abscess, he at once removed the necrosed tibia. This practice of the English surgeon being in accordance with the results of the experiments on the regeneration of bone obtained by Flourens and Syme, and at a later period Ollier, I was induced to adopt it. . . . . From that time to 1873—that is, for seven years—I treated by this procedure the numerous cases of diffused phlegmonous periostitis that were placed under my care. The lower half of the tibia and of the fibula, the entire calcaneum, and the bones of the metatarsus have thus been removed. The result of the operation, which is of easy execution, is to procure rapid recovery and save the child from exhaustive suppuration. It should therefore be substituted for the old procedure of waiting until the bone becomes mobilized in the bony cage in which it is inclosed. In doing this, abundant suppurations (which exhaust the young subjects) are allowed to persist; and when it is sought to arrest these and cure the fistulæ, a laborious operation, which is not always without danger, has to be performed.

"To sum up: I may say—1. In diffused phlegmonous periostitis of the lower limb, advantage attends the prompt removal of the necrosed bone immediately after the evacuation of the abscess. 2. This practice does not seem to me to be applicable to the femur or even to the upper portion of the humerus. 3. In performing this extraction of necrosed bones great care should be taken to maintain in their normal positions the different parts that are attached to the segment of the affected limb. 4. This contention is very advantageously effected by means of the plaster apparatus—plaster grooves (*gouttères platrées*) moulded on the limb—which I have employed in diseases of the joints since 1863."—*Med. Times and Gaz.*, Jan. 23, 1875, from *Bulletin*, Jan. 12, 1875.

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40. *Antiseptic Incisions an Aid to Surgical Diagnosis.*—Mr. THOMAS ANNANDALE states (*Edinburgh Med. Journ.*, Jan. 1875) that he has during the last few years made a free use of special exploratory incisions, with the important addition of careful antiseptic treatment of the wound, and having learned its value and safety he urges its more frequent use as an aid to surgical diagnosis in important surgical affections. He adds that "in affections of the extremities the employment of the 'bloodless' method of operating is, in suitable cases, a valuable assistance in making such investigations, for the various tissues can now by this means be seen and examined as conveniently as in the dead body."

He thinks these antiseptic incisions are valuable in the following classes of cases:—

"*First.* In obscure cases of suppuration.

"In abscesses, or suppuration occurring in the abdominal or pelvic cavities, or in some of the important surgical regions, the presence of pus cannot always be detected by the exploring needle, and I have on several occasions discovered a collection of pus by an antiseptic incision, having previously failed to obtain this information by the use of the former means. An additional advantage in such cases is that the introduction of a finger will usually determine definitely the situation and cause of the condition; and the great importance of detecting *early* the presence of pus, so as to allow of its being removed, is recognized by all practicable surgeons.

"*Second.* In cases of obscure morbid growths, or doubtful solid swellings.

"The question of treatment which arises in such cases can only be determined by an accurate knowledge of the nature and connections of the diseased condition. In some instances careful external examination, and a study of the history of the affection, may be sufficient for the purpose, but there are other cases in which a proper diagnosis cannot be made by these means alone. In these latter cases, an incision carefully made in a convenient situation, so as to allow a finger to be introduced, will surely decide any doubtful points, and determine what treatment is most likely to be beneficial. I have in this way received valuable infor-

mation in regard to the treatment of obscure cases of tumour or swelling in connection with the jaws, groin, and other regions."

"*Third.* In diseases of joints.

"When suppuration has taken place in the interior of a joint, the well-recognized practice is to evacuate the pus by incision as early as possible, with the object of preventing or limiting further mischief. In suppuration of some of the deeper joints, such as the hip, it is not always possible to detect by external examination the presence of pus, and therefore surgical interference in such cases is usually delayed until fluctuation has become more distinct. But delay under these circumstances is not advantageous, and the joint structures and surrounding tissues all suffer during the progress of the suppuration, and consequently the result cannot be so satisfactory in the majority of instances as when the pus is evacuated at an earlier period. I have relieved by an antiseptic exploratory incision five or six cases of commencing suppuration of the hip-joint, and ascertained the exact condition of the articular surfaces, in which no distinct external signs of the presence of pus could be detected. Without the aid of antiseptics in these cases I would have hesitated to open into so important a joint."

"*Fourth.* In injuries of a doubtful nature.

"Cases of dislocation or fractures near joints are occasionally very difficult to diagnose, and if such diagnosis be important in connection with the treatment and satisfactory result of the case, I would not hesitate to make an exploratory incision, with the aid of antiseptics, provided other methods of examination failed to give the proper and full information.

"Sharp fragments of bone, which may be perilling important bloodvessels or other structures, in cases of simple fracture, may be examined, and, if thought right, removed by such an incision; and I have reported a case of this kind in which I successfully extracted a sharp and separated portion of a fractured clavicle, lying over and endangering the subclavian artery.

"*Fifth.* In obscure affections of the internal viscera, which admit of being relieved by surgical means.

"Cases of intestinal obstruction, calculus of the kidney, and tumours or swellings in connection with the abdominal or pelvic viscera, of conditions simulating these various affections, frequently give rise to dangerous symptoms, and if such conditions have failed to be relieved by ordinary carefully-applied methods of treatment, it seems to me perfectly justifiable that surgery should be resorted to, if the condition is one in which there is even a chance of its being relieved or cured by surgical assistance.

"Owing, however, to the difficulty of correct diagnosis in many of these cases, the surgeon hesitates to interfere, and it is in such cases that I would advocate an antiseptic incision, in order to determine if and what operative interference can be of service."

Examples are given in most of these classes of cases in which great advantage was obtained by this means of diagnosis.

Mr. Annandale considers that the application of the principle of exploratory antiseptic incisions is by no means limited to the conditions enumerated.

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41. *Bloodless Surgery.*—Mr. Chiene read before the Medico-Chirurgical Society of Edinburgh a review of Esmarch's method of operating after elastic compression of the limb, and with an elastic cord instead of a tourniquet. Mr. Chiene discussed the advantages and disadvantages of each of these plans. The gist of these remarks was, that the elastic compression was inapplicable and dangerous in many cases, from its driving back into the circulation cancer or putrid fluids; that it was too perfect, as it emptied even his smaller capillaries, and thus prevented the formation of a proper coagulum in the larger vessels. He much preferred a method which has for years been in use in the Edinburgh Infirmary, and which he believed was introduced by Mr. Lister, namely, to elevate and bandage with a common roller the limb to be removed. H also much preferred the ordinary tourniquet to Esmarch's elastic one, because the latter cannot be slacked off gradually, but must be removed entirely, so that much blood may be lost in tying the vessels. Mr. Joseph Bell

agreed in many of Mr. Chiene's theoretical objections to Esmarch's method. He had given it a very full trial, and believed that, while it was easily managed with good assistants in hospital practice, the old-fashioned tourniquet was much more suitable for cases in private, especially in the country, where few skilled assistants were to be had. He liked Esmarch's method much in cases of necrosis or excision of joints such as the wrist-joint, which demand careful dissection, and in which the wound could be plugged, and thus all bleeding stopped before the elastic cord was removed. He also thought it of great advantage in all cases in which needles, splinters, bullets, etc., had to be sought for, as it entirely removed any bleeding, and also rendered the parts partly anæsthetic.—*British Med. Journ.*, Feb. 6, 1875.

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42. *The Induction of Local Anœsthesia by Esmarch's Bloodless Method.*—M. LANNELONGUE read to the Surgical Society of Paris a report on a paper submitted by M. CHAUVEL. M. LE FORT having related to the Society a case of excision of the elbow which he had performed by Esmarch's bloodless method without the patient having felt any pain, M. Chauvel communicated the results of some researches upon the subject which he has been making at the Val-de-Grâce, where he is an *agrégé*. M. Lannelongue observes that it would indeed be a welcome fact if we were able to add to the already great advantages derivable from Esmarch's bloodless method the suppression of sensibility in the parts concerned. M. Chauvel first details fifteen experiments made upon himself and others, and then relates three cases which he regards as corroborative of the results obtained from these. In all but one of the fifteen experiments diminution of sensibility was observed after a period varying from five to fifteen or twenty minutes, the insensibility occurring much sooner in the upper than in the lower limbs—the amount of constriction exerted by the bandage, and especially by the caoutchouc tube, greatly influencing the period of development and the degree of the local anæsthesia. M. Chauvel admits that the anæsthesia is almost always incomplete, and the reporter expresses himself dissatisfied with his mode of testing sensibility, and with the distinction between tactile insensibility and insensibility to pain. Moreover, the experiments have been confined to the skin, and no deduction can be drawn from them as to the insensibility of the deeper-seated parts.

The clinical portion of the memoir is really that whence deductions can alone be surely drawn; and here M Chauvel has not much to offer, being only able to produce three cases in which the plan has been tried in the present point of view. Two of these were examples of ingrowing nail, requiring operations which were attended with very little suffering. These M. Lannelongue considers as quite insufficient to establish the fact of insensibility being induced by compression, having regard to their short duration, to the fact that absolute insensibility was not attained, and bearing in mind the very different amount of suffering that is caused by this operation in different patients. The third case is still less conclusive, consisting as it did in the supposed abolition of sensibility to the actual cautery in a soldier who was strongly suspected of malingering. Many facts in operative surgery may also be cited in proof that no such immunity from suffering attends the employment of compression. We do not find by depriving a part of its arterial blood, and placing it in a state of total ischæmia, that we destroy its sensibility. Thus the ligature of the principal limb, and even of the aorta itself, is not attended with this effect; and Longet states that in the five instances in which he tied the aorta in dogs, the sensibility of the lower limbs was never abolished, and the irritation of the sciatic nerve or its branches proved as painful as in the normal condition.

"It is true that Esmarch's procedure not only induces ischæmia, but renders the part anæmic in the extreme. Still, it does not absolutely deprive it of all the venous blood it contains, as is shown by the red colour of most of the tissues. Moreover, elastic compression is quite unable to expel the blood comprised within the different portions of the skeleton which compose a limb. Probably, too, exemption applies also to the nerves, the circulation in which takes place by means of long anatomical arcades, the origins of which in the important nerves are very near the origins of these nerves themselves—that is, at

points where compression cannot be exerted. These circumstances might be advanced to explain the persistence of the nervous functions were it demonstrated that the suspension of all circulation in a nerve, during a time too short for the nutrition of the nerve to be disturbed, suppresses its physiological properties. But it need not be said for this that sensibility undergoes no modification during compression of the limbs, and I may cite the fertile experiments performed lately by Laborde. Immediately after the application of Esmarch's apparatus to one of the hinder limbs of a healthy dog (he says), pricking, pinching, and burning do not give rise to any motor or subjective reaction indicative of a painful manifestation. Forcible pinching of the matrix of the nail, which is especially painful in dogs, gives rise to no apparent sensation; and if some nervous filaments of the two branches of the sciatic have been exposed and are pinched, neither do they give rise to any sensational reaction. M. Laborde has further shown that this anæsthetic period does not last upon the average more than three minutes, during which time it is constant. It is succeeded by a new phase when the sensibility regains its normal rate, but which also only lasts two or three minutes, this being followed, in its turn, by a very characteristic hyperæsthetic period, which continues with exacerbations, its greatest intensity occurring at the eighth or ninth minute. From these experiments it would seem to result that we ought to choose the initial period of the anæsthesia in order to avoid the pain in operations; but its short duration and the hyperæsthesia which succeed it, offer but few guarantees for most operations."—*Med. Times and Gaz.*, Jan. 2, 1875, from *Gaz. des Hôp.*, Dec. 12.

OPHTHALMOLOGY.

43. *Amaurosis from a Carious Tooth.*—Dr. P. Lardier records (*L'Union Médicale*, Dec. 14th, 1874) a case of amaurosis in the right eye of a boy eight years of age, who also had chronic conjunctivitis. On investigating the case Dr. Lardier was finally led to suspect these troubles to be the result of an extensive caries of the first upper molar on the right side. He accordingly extracted the tooth, which was followed with restoration of sight, and under proper treatment the conjunctivitis was afterwards cured.

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44. *Iridotomy.*—Dr. Wecker, in an article on this subject, proposes important modifications as regards the method of performing the operation, and the cases adapted for it. He gives a sketch of its history from the time of Cheselden. Mr. Bowman, at the Ophthalmological Congress in London, excited fresh interest in the subject by advocating a plan of incising the iris in cases of zonular cataract, etc., instead of performing iridectomy. In iridectomy the widest part of the artificial pupil is at the periphery, where it is not wanted; in iridotomy the broadest part is central. Mr. Bowman makes a small incision in the cornea opposite the intended pupil, and then introduces a small knife, blunt at the point and back, between the pupillary edge of the portion of iris to be cut and the front of the lens, and then cuts forwards against the cornea. The incision in the iris gapes, and forms a new pupil (Report of the Ophth. Cong. in Lond. in 1872; Soelberg Wells' Treatise, 3d edit.). Dr. Wecker uses a triangular keratome with a stop and a pair of forceps scissors. The blades are bent at an angle to the shaft, and are introduced closed, occupying very little space, by pressure on the handle. When this is relaxed the blades separate, but without tearing open the corneal wound. These do away with the necessity of cutting from behind forwards and risking the cornea. The instruments are figured, and illustrations of cases are given. He either simply incises the iris (simple iridotomy) or cuts a triangular piece out (double iridotomy). Simple incision of the pupillary margin of the iris is adapted for cases in which the central part of the lens or of the cornea is the seat of opacity, or where the cornea is abnormally curved, that is, in cases in which the patient

can see best through the peripheral portions of the cornea, etc. An incision is made in the cornea with the stop keratome opposite to where the artificial pupil is intended to be made, and the knife carefully withdrawn. The scissors are then introduced closed till opposite the margin to be cut, when they are slightly opened and one blade is passed in front of the iris and the other behind; one snip divides the sphincter pupillæ, and the scissors are carefully withdrawn closed. A drop of atropia is applied and the eye covered. When the aqueous becomes re-secreted, the cut edges of the sphincter will be found to have separated, leaving a good artificial pupil. Every care must be taken not to injure the lens. *Double iridotomy* is necessary where the lens is absent owing to operation or accident, and the pupil has become closed owing to inflammation. The corneal incision is made at the point towards which the stretched fibres of the iris converge. The stop keratome is thrust in within the corneal margin through the iris and false membrane, its point then running parallel with the posterior surface of the same, and is then carefully withdrawn. The scissors are introduced so that one blade passes in front and the other behind the iris and membrane, and these are cut with a quick snip. A second cut is now made, so that the two form a triangle with the apex at the wound. The flap thus formed is retracted by the action of the remaining healthy iris, and an opening remains. In some cases where the iris is much stretched and fairly healthy a simple incision is sufficient. There is very little bleeding. Simple iridotomy is contra-indicated where the iris is wholly adherent to a scar, or hidden behind a dense leucoma, which prevents the operator seeing what he is doing, or where the iris is paralyzed. Double iridotomy should only be performed in cases where the lens is absent.—*Royal London Ophthalmic Hosp. Rep.*, vol. viii. p. 1, from *Annals d'Oculistique*, Sept. and Oct. 1873.

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45. *Optic Neuritis, with Complete Loss of Vision; Recovery under Treatment.*—The following case of this was communicated to the Clinical Society (Jan. 22) by Dr. THOROWGOOD. Kate G., æt. 12, was admitted into the West London Hospital October 23, 1873. The history, taken by Mr. Blackman, the clinical clerk, was as follows: The patient had had, five weeks previously, a pain at the lower part of the back from a blow against a desk. Liniment was used; and in a short time this pain left her. Shortly afterwards, a pain came at the back of her neck, with tenderness, swelling, and stiffness on movement. For this, she saw Dr. Thorowgood, who gave her a belladona and mercury liniment, which she used, and the pain and stiffness went away. A week after this, she noticed a fog before her eyes, which gradually increased, till in a week vision was perfectly lost in both eyes. She was now admitted to the hospital. No sign of disease or injury of spine could be detected. She could just discern between light and shade. On October 24, Mr. Bowater Vernon examined her eyes with the ophthalmoscope. The optic disks were swollen with irregular outline; the veins engorged, and obscured in places; whole fundus oculi paler, and more yellow than normal. No hemorrhage. The same description applied to both eyes. She was not feverish; the organs of the chest were healthy; there was no albumen in the urine. Two leeches were applied to the temples, and three grains of hydrargyrum cum cretâ given every three hours. October 28 she was much the same; to have thirty minims of liquor hydrargyri perchloridi three times daily in decoction of bark. Leeches were again applied to the temples. On November 1, Mr. Vernon examined the eyes again. The right optic disk was much swollen; its outline was completely obscured. The fundus was ash-gray in colour. The left eye had the surface of the disk marked by apparently numerous small vessels. Under treatment with iodide of potassium, and then liquor strychniæ with iron, this patient improved; and on December 23, 1873, was seen as out-patient, and able to read well. On January 22, 1875, she was seen again, and her vision, tested by Mr. Vernon with Snellen's type-board, was declared normal. The left eye was rather better than the right, which was, perhaps, not quite up to the normal range. The optic disks looked pale and anæmic. In commenting on the case, Dr. Thorowgood said that Mr. Vernon considered the case one of true optic neuritis, not a mere congestion from impeded return of blood to the

sinuses. The question was, had the spinal pain any connection with the neuritis? In cases of loss of vision due to spinal disease, atrophy of the disk might be expected from the great sympathetic being involved. The present case seemed one of basic meningitis extending to and involving the optic nerves. Meningitis might be very insidious in its progress, and might do much mischief, if not controlled by treatment. The present case showed the value of the ophthalmoscope in detecting meningitis, and so guiding to a plan of treatment by local depletion and mercurial medicines, which proved very successful.—*Brit. Med. Journ.*, Jan. 30, 1875.

MIDWIFERY AND GYNÆCOLOGY.

46. *Injections of Hot Water as a means of arresting Uterine Hemorrhage.*—Dr. WINDELBAND states that his attention was called by the perusal of an article by an American practitioner, to the effect of injections of hot water as a means of arresting hemorrhage from the uterus. In a case of abortion with alarming hemorrhage, for the restraint of which ergot and cold water injections had failed, Dr. Windelband injected water at about 100° Fahr. Within a short time, or rather at the moment of entrance of the fluid, such energetic contraction of the uterus took place, that the ovum, which could but just be felt within the open os uteri, was ejected with its membranes from the uterus in a quarter of an hour. For some days, he repeated the injections, when there was any indication of bleeding, and afterwards continued them at a lukewarm temperature until involution of the uterus was complete. He says that he has used injections of hot water with the best results in a number of cases which have occurred in his practice during the last year, including twenty-one cases of abortion, two cases of severe hemorrhage from placenta prævia, cases of hemorrhage attending fibroid and other tumours of the uterus, cases of carcinoma, of *post-partum* hemorrhage, of profuse menstruation, etc. He is convinced that the hot water exerts a far more energetic action on the muscular structure of the uterus, than cold water, either alone or with astringent remedies in solution. He makes the injections with an ordinary uterine douche, the water having a temperature varying from 95° to 100° Fahr.; and has never found any disadvantageous results.—*Brit. Med. Journ.*, Feb. 13, 1875, from *Allgeeinem Medicin. Central-Zeitung*, Jan. 27, 1875.

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47. *Hydrops Amnii.*—Dr. CHAS. J. EGAN, Assistant-Surgeon Grey's Hospital, King William Town, Kaffraria, relates (*Med. Times and Gaz.*, Jan. 9, 1875) three cases of this (in one three gallons of water were discharged), and calls attention to the following points as worthy of notice:—

1. *The Delay to the Labour.*—This is the only point mentioned in regard to these cases in systematic works on midwifery. The excess of the liquor amnii seems to arise from some diseased state of the amnion, which, while it produces an increased quantity of fluid, at the same time renders the membrane tougher and stronger than usual, so that the muscular contractions of the uterus are unable to rupture it; and, at the same time, the uterus itself becomes weak from over-distension, and its contractions much less effective than natural. In none of these cases was there the least suspicion of syphilitic taint, as I inquired into this subject, and all the patients were mothers of perfectly healthy children.

2. *The Danger of Hemorrhage before the Birth of the Child.*—This I consider arises from the partial separation of the placenta as soon as the pressure produced by the excess of water is suddenly removed. In the second and third cases the clots of blood attached to the placenta point to this as the most probable cause of the hemorrhage. In the first case the placenta was not examined on this point. In Dr. Burns's *Principles of Midwifery* (fifth edition, sec. 23., chap. xv.)—an old work, but yet of much value—it is stated that

labour in which the liquor amnii is in excess is liable to be accompanied or succeeded by uterine hemorrhage, but I do not find this mentioned by other authors.

3. *That the Child is frequently Born Dead.*—Death in these cases, I consider, results from the same cause as the hemorrhage—viz., separation of the placenta in the womb some time before the birth. The anencephalous state of the child in the third case was no reason that it should not have life when born. In the second case the child was alive before the evacuation of the water, as proved by the stethoscope. In the first case I consider that the child being born alive was owing to the fact that the os was fully dilated at the time that the water was evacuated, and that the child, being across, was delivered at once by turning, and before death could occur from separation of the placenta.

The treatment for these cases appears to be—before rupturing the membranes to administer a full dose of ergot, and to apply a binder on the same principle as when tapping the abdomen in cases of ascites; and then, as soon as possible, to deliver the child by turning.

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48. *On the Influence of Syphilis in Pregnant Women, under various modes of Treatment.*—Dr. F. WEBER, of St. Petersburg, has given the results of his observations in 129 pregnant women suffering from syphilis admitted into the Obuchow Hospital during the ten years 1863–73. Of these patients, 35 were treated only locally or not at all; 35 were submitted to treatment by inunction; in 23, inunction was combined with the external use of iodine (iodide of potassium with tincture of iodine); 19 were treated by the internal use of a combination of iodide of potassium and corrosive sublimate; and in 17 cases iodide of potassium was the remedy used. He gives abundant statistical details, and sums up as follows: In general, the course of pregnancy was interrupted in 25, or 20 per cent. of the cases; this proportion, however, may be reduced, when it is remembered that of the patients four had erysipelas of the head, one recurrent fever, and one exanthematous typhus. 2. Every method of treatment which interferes with the digestive system predisposes to untimely birth. 3. In the cases submitted to simple local treatment, there were 20 per cent. of premature births; in three, however (suffering from typhus and recurrent fevers, and from extensive formation of abscesses), violent fever appears to have been in part the cause of the untimely labour. 4. In pregnant women who were treated by inunction together with local remedies, there was no disturbance of the course of pregnancy. This confirms Professor Sigmund's conjecture, that the inunction treatment has no injurious influence on the course of pregnancy. 5. In women in whom inunction was either accompanied or followed by the internal use of iodine, the percentage of premature births was 37; this, however, may be reduced to 20 by deducting two severe cases of erysipelas of the head. 6. General treatment with a solution of iodide of potassium and perchloride of mercury was attended by 15 per cent. of premature births. 7. In cases treated by iodide of potassium, 42 per cent. of untimely births occurred. 8. The injurious action of general treatment did not in any way correspond to its duration, but much rather to its effects on the digestive organs. Hence general treatment should be interrupted on the first indication of indigestion in a pregnant woman. 9. The period of pregnancy at which general treatment is commenced appears to have no influence on the occurrence of premature labour. 10. The stage of development of the syphilis seems to be not without influence on the occurrence of untimely birth. 11. The puerperal period ran an abnormal course in 4 out of 14 cases treated locally, in 3 out of 8 treated by inunction and iodine, in 3 out of 4 treated by iodine and sublimate (one of these patients died), and in 4 out of 10 treated by iodide of potassium.

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49. *Local Use of Liquor Ferri Chloridi in Cancerous Ulcerations of the Uterus.*—Dr. CHARLES J. GIBB reports (*Brit. Med. Journ.*, Feb. 13, 1875) having used with benefit the application of liquor ferri chloridi to cancerous ulcerations of the uterus. "It is," he says, "when the disease is purely epithelial, and chronic, and rodent in character, and confined to the surface, that the treatment I have described does most good, and, as I have said, appears to cure even bad cases. The application of the perchloride rarely causes pain. On

four or five occasions, a patient, on returning home, has been confined to bed for a few days, and, in one of the successful cases, for upwards of a fortnight, in consequence of a severe colicky pain in the region of the uterus, lower abdomen, and back. I am inclined to think that the wool had been over-saturated in the perchloride in such cases, as it has occasionally happened that the solution has flowed from the vagina over the vulva after the patient has left my offices, and those parts been blistered and painfully excoriated as a consequence. On this account, I am now very careful to wash away with a syringe all discharges from the surface of the cancer, and to raise the breech of the patient to prevent any overflow of the solution over the vulva, and after applying the perchloride, to suck up with a sponge from out of the bottom of the vagina any superabundant solution which a slight pressure on the saturated wool over the sore may cause to flow out; after that, to retain the wool in its place by a loose plug of tow in the vagina; and lastly, to dry and oil the vulva before the patient rises from the couch.

I have always used the strongest pharmacopœial solution undiluted, as I have only used it to secure a caustic action. At first, I applied it on a piece of sponge or lint; but finally found cotton-wool to answer best, as it sucks up any quantity that may be required, parts with it easily, and can be moulded into any form, so as to fill a cavity or cover over and adhere to any growth. It has happened occasionally that I have found the cotton-wool still adherent over the sore a week or more after its application, and when removed, it is always a black or chocolate-coloured mass, frequently quite solid, from the quantity of blood or albuminous matter absorbed in its meshes and clotted therein; indeed one patient gravely told me she had passed a solid brown egg a few days after one of her visits. No doubt it was the hardened wool, although she declared she had cleared out the vagina the day after her visit.

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50. *Torsion of the Pedicle of the Ovary.*—Koeberlé agrees with Rokitansky that some of the pedicellated pelvic viscera are liable, from the various movements of the body, such as lying on the side, etc., to become rotated on their axis, and even undergo a veritable torsion. In the case of the ovary this torsion may take place slowly, in which case it will give rise to but few symptoms; or suddenly, in which case it will cause symptoms that will make the diagnosis possible, such as pain, and the rapid formation of a cystic tumour. This accident happens most readily during menstruation. Immediately after some sudden twist or turn, the patient experiences a sudden and prolonged pain in one hypogastric region, accompanied by numbness of the corresponding thigh and pain in the region of the kidneys, sometimes also by vomiting. This pain is exacerbated at intervals, and may become so intense as even to call for the operation of ovariotomy, though the tumour itself is very small. As a consequence of this torsion the return of fluids through the veins and lymphatics is retarded; these vessels become dilated, and a cyst is formed. This cyst is usually unilocular, and contains a brownish fluid mixed with blood, or, in some cases, coagulable lymph.

Koeberlé has seen some cases in which the ovary was entirely detached. It had, however, contracted vascular adhesions with the surrounding viscera, from which it drew its nutritive supply. He has also seen cases of torsion of the pedicle of a fibrous tumour in which the lesion was diagnosticated.

Schutzenberg has seen a uterus, which contained a large fibrous tumour, thus twisted. The woman was suddenly attacked by violent pain after turning herself in bed, lypothymia, with a small pulse. On her death, which followed soon afterwards, it was found that the uterus and the vagina had turned once completely round. There was great congestion at the fundus, with subperitoneal exudation of blood.—*Irish Hospital Gazette*, March 1, 1875, and *Rev. des Sciences Méd.*, Jan. 1875.

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51. *Metro-peritonitis following the Use of the ordinary Female Syringe.*—Dr. Thomas More Madden said, at a meeting of the Dublin Obstetrical Society (Feb. 13, 1875), that the ordinary vaginal syringe is the most frequently used

instrument in gynæcological practice, being employed in nine-tenths of the cases of real or suspected uterine disease, and as it is freely ordered by medical men, and habitually used by patients without any special caution or apprehension of possible danger, Dr. More Madden thought that the history of a case showing that this instrument is by no means as harmless as it is commonly supposed to be, was not undeserving of the consideration of the Obstetrical Society. The case was one of intense uterine colic followed by severe metro-peritonitis, which came on suddenly during the use of an astringent injection with the ordinary vaginal syringe. The metro-peritonitis was accompanied with almost complete collapse, and attended with uncontrollable retching, by which the patient's life was kept in extreme jeopardy for several days. These symptoms were evidently caused by the injected fluid having passed through the patulous os into the cavity of the uterus, which was in a state of subinvolution at the time, and by the escape of a portion of it through the dilated Fallopian tube into the peritoneal cavity. However, the possibility of such an accident being produced by the use of the vaginal syringe is practically ignored by the majority of gynæcologists, and although similar cases are comparatively rare, yet the mere possibility of this occurrence in any case in which the syringe may be employed should render physicians more cautious than they generally are in this recommendation of this universally used, and, he would add, much abused instrument, the possible dangerous effects as well as the inconveniences and imperfections, together for a substitute for which he had brought under the consideration of the Society a couple of years previously.[1] The force with which fluid may be injected into the vagina, or even into the uterus by the common syringe may, as in the foregoing case, be so great as to occasion the most injurious effects, and in any case its action must necessarily be very imperfect. To produce any permanent benefit by injections in a case of inflammation or congestion of the cervix uteri for example, the injected fluid must be kept in contact with the inflamed part at a certain uniform temperature for a long time continuously, and this cannot possibly be accomplished with the ordinary syringe, as the fatigue of working that instrument is so great, and the position of the patient is so irksome during its use as to prevent its being employed for more than a few minutes at a time. To obviate these inconveniences various contrivances have been devised by gynæcologists. For his own part, Dr. More Madden preferred the improved utero-vaginal irrigator he had exhibited before the Obstetrical Society two years ago, and a drawing of which was published in the second volume of their proceedings. With that instrument the accident now under consideration could not possibly have occurred. This irrigator is very portable, can be readily used whenever a vessel of water is obtainable, and is capable of sending a gentle flow of water, plain or medicated, and at any temperature, into the vagina, or even into the uterus if ever that measure, which is very rarely required in gynæcological as distinguished from obstetric practice, should be considered expedient. And this, moreover, in any position, and for any length of time that may be advisable, and without causing the patient the slightest fatigue. The advantages of an irrigator over the awkward and imperfect vaginal syringe generally used, leads Dr. More Madden to recommend any gynæcologists who have not hitherto done so to give a fair trial to this simple, easily constructed and easily used instrument as a substitute for it in gynæcological practice. Cases such as that just reported were also, the author said, of interest in their bearing on the recent discussion as to the safety of strong astringent injection into the uterus in the treatment of *post-partum* hemorrhage. Against this practice it had been argued that there was danger of forcing the injected fluid through the open uterine sinuses into the circulation, and thus occasioning embolism, or of driving it through the Fallopian tubes into the abdominal cavity, and thus causing peritonitis. As on a former occasion when this question was under discussion in the Obstetrical Society, he, Dr. More Madden, had expressed an opinion as to the improbability of such an accident, he now felt bound to state that the foregoing case had somewhat modified his views on this point. For if metro-peritonitis could be excited by

[1] *Vide* Irish Hospital Gazette, vol. i. p. 223.

a fluid injected into the uterus five weeks after delivery, it was of course still more probable that the same effect might thus be occasioned immediately after delivery when the uterine vessels and passages were far more likely to be pervious. But the possibility of such an accident would not, in any degree, prevent him from again resorting to this remedy, the value of which he had learned by long experience, when necessary, that is to say in any urgent case of severe *post-partum* hemorrhage which could not be stopped by any other means.—*Irish Hospital Gazette*, March 1, 1875.

MEDICAL JURISPRUDENCE AND TOXICOLOGY.

52. *Poisoning by Chloral.*—Dr. Chouppe records a case of this. He observes that chloral was scarcely introduced, when large doses came to be administered with apparent innocuity. Thus, M. Martineau related a case of cancer of the ear, in which, for the relief of intolerable pain, he administered the enormous quantity of sixteen grammes in two hours; while M. Bourdon stated that in puerperal convulsions he often gave ten to twelve grammes; and M. Mialhe declared that he considered it almost impossible to kill an animal by chloral given by the mouth.

The following case, however, shows that large doses may be attended with great danger. Dr. Chouppe was called at midnight of January 12 to a gentleman, whom he found quite insensible, with stertorous breathing, a punctiform contracted pupil, irregular respiration, and a small, irregular pulse. The nature of the case was obscure until a bottle containing some remains of chloral was found. The patient's state became rapidly worse; the respiration became very slow, the pulse imperceptible at the wrist, and the movements of the heart scarcely audible, the trunk and limbs being covered with a cold and viscous sweat. By one o'clock all spontaneous respiration had ceased, and the heart could no longer be heard. Inductive electricity and artificial respiration had been resorted to, with little or no effect, when the reporter called to mind a case of poisoning by morphia, at New York, in which artificial respiration had been kept up for several hours by faradization of the diaphragm. One of the poles was passed over the track of the phrenic nerve, and the other over the insertions of the diaphragm, a thermometer placed in the rectum indicating a temperature of 30.2° C., being the lowest observed during the progress of the case. The application was continued for thirty-five or forty minutes, at the end of which time the patient respired spontaneously, although slowly and irregularly, while the radial pulse could be faintly felt, and the movements of the heart were rapid. The first sign of returning sensibility was a dilatation of the pupils during the passage of the current, this ceasing when the current was interrupted. Next followed some cries, and lastly a complete return of consciousness during the passage of the current, the patient then recognizing those around him. At three o'clock he fell into a calm sleep. His pulse was 80, strong, and regular; the respiration was regular and 20; and the rectal temperature rose to 37.4°. The sleep lasted until nine, the patient awaking reposed and unaware of what had occurred.

It seems the patient took the chloral for the first time because he slept badly; and the bottle whence he drank the solution was supposed to have contained from thirteen to fifteen grammes, of which he probably took a third. Very soon after he commenced feeling heavy, and undressed himself, after which time he recollected nothing.—*Med. Times and Gaz.*, Feb. 12, from *Gaz. Hebdomadaire*, Feb. 5, 1875.

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53. *Atropia as an Antidote to Poisonous Mushrooms.*—Dr. T. Lauder Brunton has a very interesting paper on this subject in the *Brit. Med. Journ.* for 14th Nov. 1874. He says that one of the most perfect instances of antagonism with which we are acquainted is the power of atropia to counteract the

poisonous principle of mushrooms. The active principle of the *Agaricus muscarius* or *Amanita muscaria* was separated by Prof. Schmiedeberg of Strasburg, and named by him muscarin. The merest trace of this alkaloid will arrest the pulsations of the frog's heart almost instantaneously; but if a minute quantity of atropia be brought into contact with the organ it will begin to pulsate again. A little atropia at once counteracts the effects of muscarin on the heart in mammals, just as it does in the frog. Brunton discovered that muscarin causes contraction of the pulmonary vessels, and so gives rise to the intense dyspnœa as characteristic of this poison. The dyspnœa, as well as the other symptoms of poisoning, disappear almost immediately after the injection of atropia.

In cases of poisoning by mushrooms, the stomach should be emptied first; and it is curious that in such cases tickling the fauces is much more efficacious in producing vomiting than the administration of tartar emetic. The antidote may be given by the mouth, either in the form of tincture of belladonna or liquor atropiæ; but Schmiedeberg and Koppe prefer subcutaneous injection, on account of the more rapid absorption and speedy action of the drug, as well as the more accurate adjustment of the dose. The dose for subcutaneous injection should be about one-hundredth of a grain, or about one minim of the liquor atropiæ sulphatis (B. P.), repeated, if necessary, until the dyspnœa is relieved. —*Ed. Med. Journ.*, Feb. 1875.

54. *Antagonism of Atropia and Morphia.*—Dr. COUZIER communicated to the *Société de Thérapeutique* a case of poisoning by atropia treated by enormous doses of morphia. A girl, aged 26, swallowed five centigrammes of sulphate of morphia. Furious delirium, aphonia, collapse, enormous dilation of the pupil followed. Dr. Couzier, in the course of a few hours, injected seventy centigrammes of the chlorhydrate of morphia. The next day the patient was out of danger.

M. DUJARDIN-BEAUMETZ considered that the belief in the antagonism of morphia and atropia was a grave therapeutical error; and what astonished him in the present case was that the patient did not die of a double poisoning. Prof. GUBLER somewhat agreed in this opinion, believing, however, that there is really an antagonism between the two substances, but that this is of no avail when the poisoning is considerable. Errors arise concerning poisoning by atropia, because ignorance prevails concerning the natural course of poisoning by this substance. Antagonistic powers are attributed to the remedy that is employed, because the patient gets well. This is an error, as the following case shows: An advocate liable to migraine, while at home and alone, took a dessert-spoonful of a mixture containing forty centigrammes of atropia in thirty grammes of water. On rising from his bed he stumbled, fell down, and remained unconscious until found by his servant next day. The day after the accident mydriasis was the only effect of it remaining. It is certain that had any remedy been administered, its antagonistic power, instead of the natural course of the poisoning, would have been adduced in explanation of the recovery. M. Gubler insisted on the great difference that there is between the effects of atropia taken by the mouth and those which result from its hypodermic injection. We may give two, three, four, or even ten milligrammes of the sulphate per diem in a mixture, without any marked physiological effects being produced, while in the same patient the injection of a single milligramme will give rise to enormous physiological effects. He is disposed to believe that this arises from the fact that atropia is remarkably unstable in presence of the ferments of the stomach. It is the same with aconitia. M. Paul did not doubt that poisoning by belladonna may be spontaneously recovered from; but still he believes that in his case the seventy centigrammes of morphia were administered with impunity in consequence of the presence of the atropia.—*Gazette Hebdom. de Med. et de Chir.*, Feb. 19, 1875.

AMERICAN INTELLIGENCE.

ORIGINAL COMMUNICATIONS.

Explanatory Note in regard to the Diagnosis of Blood Stains. By Jos. G. Richardson, M.D., Microscopist to the Pennsylvania Hospital.

In an article by Dr. J. J. Woodward, in the last issue of this Journal, elicited by my paper on Blood Stains published in the No. for July, 1874, it is stated that we can never "affirm truthfully on the strength of microscopical investigation that a given stain is positively composed of human blood." With this statement I fully agree, maintaining, however, that, whilst it is literally true, it is not the whole truth, because it often happens in practice, that *evidence other than microscopical*, narrows down the conditions of a case to the question: Is this stain human blood or that of an ox, pig, or sheep? The microscopist can then, in such cases, from fair specimens of blood spots, as ordinarily produced, affirm truthfully that "a given stain is positively composed of human blood," should it really be so, and this if doubted I can conclusively prove.

In respect to the *just* prominence which should be given to the circumstance that "the blood corpuscles of a few mammals approach so nearly in size to those of man as to render their distinction doubtful," a fact which I thus mention in my essay in this Journal for July, 1869, of which the paper of July, 1874, is a continuation (See also *Handbook of Med. Micros.*, p. 288), I think Dr. Woodward undervalues in the first place the prudence of our many medical brethren who possess microscopes without considering themselves experts; and, second, that he has overlooked in the calculation (which we both, perhaps equally, sought to make, of how to secure for humanity, by our researches, the greatest benefit with the least injury) one important factor, viz., the shrewd-witted lawyer, to be found in every country town, who would infallibly see that not one syllable of the carefully worded statements in my paper, supported any unqualified microscopist's claim to distinguish human from dog's or monkey's blood. Hence, trusting to this powerful element for the protection of the two or three innocent persons who might otherwise be endangered, I felt (honestly if mistakenly), whilst writing both my first paper and its continuation, that, should I more than indicate the animals which render our conclusions doubtful, my work might be utterly condemned as prejudicial to the interests of society, and myself perhaps compared (should I emphasize and reiterate the fact that science alone could not detect the falsehood of a criminal's story if he cunningly asserted that suspicious stains were made by the blood of a dog) to a toxicologist publishing a treatise, setting forth most faithfully the method by which poisoners may best destroy their victims with the least danger of detection in their crimes. Be it remembered also, that in all cases a really innocent person, wrongly accused of murder, on the ground of blood stains upon his clothing, etc., actually produced from that "constant" (yet rarely slaughtered) "companion of man," the dog, or from a seal, or otter, needs no microscopist to prompt him into

telling (and trying to confirm), *when first arrested*, the *true* origin of the suspicious blood spots.

These various considerations led me to publish my results in a guarded manner, but, now that all responsibility for harm has been removed, I am glad for the sake of the *few* who might draw erroneous inferences from my former papers, to say most emphatically, that I believe we cannot at present distinguish positively, in dried stains, between the blood corpuscles of man, and those of any mammal in which the disks measure on an average over $\frac{1}{4000}$ of an inch. Hence, therefore, until further discoveries are made, a microscopist's best efforts at revealing crime can only serve the cause of right and justice in those cases where the criminal's attorneys, in spite of being *forewarned* and consequently forearmed, fail to prepare or suborn testimony skilfully enough to convince the jury that some dog, rabbit, elephant, monkey, etc., has been killed, in such a way as to produce blood stains which are likely to be confounded with those of the murdered victim. That I was induced to avoid specifically stating this failure of our science by no unfounded apprehension of evil results, is *proved* by the fact that after my evidence was delivered in the Larribee trial at Franklin, Pa., the prisoner's counsel, a "shrewd-witted lawyer," in order to account for spots on the defendant's boots, brought two women into court who testified that the boots were sprinkled as they stood in a corner of the kitchen, by a puppy which jumped away from them just as they got one ear cut, and ran round the room shaking its bleeding head. Further to substantiate this tale, a dog with one ear clipped was shown to the jury, and sworn to as the very one from which the blood was shed. Fortunately, however, it so happened that I had examined two spots on the prisoner's pantaloons, finding them to be human blood, in contradistinction to pheasant's blood, as he first explained them to be, and since the contrivers of this dog story apparently forgot that the pantaloons were not standing up in the boots, to be sprinkled with them, their ingenious theory failed to gain credence with the jurors, who brought in a verdict of guilty. I venture however to predict that from this explanatory note, *and* the essay which made it necessary, will spring a host of bloody dog tales to account for suspicious stains on the clothing, etc., of murderers, until even attorneys for the defence become themselves ashamed to put forward this thin, worn-out plea.

In regard to the supposed greater accuracy of Carl Schmidt's observation, that dried and remoistened blood corpuscles shrink nearly one-half, I desire to add that I think it is chiefly accurate concerning specimens of *crenated* corpuscles, such as form when considerable quantities of blood undergo desiccation, and will be pleased at any time to demonstrate the general correctness of my measurements of the disks in the thin films of true *blood stains* (as emphatically distinguished from *masses* of dried blood).

DOMESTIC SUMMARY.

Tractile Method in Strangulated Hernia.—In our No. for April, 1874, we published an interesting article on this method by Dr. LEASURE. In the succeeding No. (July) will be found a case successfully treated in India by this plan. At a recent meeting of the *Société de Chirurgie* M. PERRIN (*Irish Hosp. Gaz.*, March 1, from *La France Médicale*, Nov. 14, 1874) communicated a

case of inguino-scrotal hernia, in which he had successfully resorted to this method. Taxis, under chloroform, had been tried without success by M. Gosselin, and that distinguished surgeon was about to operate, when M. Perrin, who had read the description of this method of reduction, proposed that it should be tried. Accordingly, forty-six hours after the strangulation had occurred, a hospital attendant took the patient up by his legs, and placing them over his (the attendant's) shoulders, raised him up so that the patient's head and shoulders rested upon the bed. In this position M. Perrin practised the taxis, and the hernia was soon reduced to half its former size. The patient was replaced upon his bed, and the reduction was completed in the horizontal position.

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On the Use of Nitrite of Amyl in various forms of Spasm, and on its Value as an Aid to Diagnosis.—Dr. S. Weir Mitchell, in an interesting communication to the College of Physicians of Philadelphia (Feb. 3, 1875), stated that for more than a year he had been aware that nitrite of amyl would be a proper means to use in epilepsy. It was clear to him that the nitrite caused, with rapidity, fulness of the vessels of the whole head, and that near to the outset of an attack of epilepsy there is a condition of vasal spasm. He hoped that he would be able by the use of the nitrite to counteract this state of vascular contraction, and so to break the chain of morbid phenomena, and thus end the attack before its more disastrous consequences should follow. This reasonable expectation was not disappointed. He was, of course, well aware that in most cases of epilepsy there would be no time to secure the inhalation of enough of nitrite of amyl to produce an effect, but he was also aware that in at least two classes of epileptics the opportunity for its use would be given. There are rare examples of epilepsy in which the warning of the coming on of an attack so far precedes the spasm and loss of consciousness as to enable the patient to inhale the nitrite. In other cases the patient has a succession of fits within a limited space of time, and being then, of necessity, in bed, is so placed that a watchful nurse may find time to use the nitrite.

Since experience has demonstrated to Dr. Mitchell the remarkable power of this agent to check spasm, he has given it for that purpose a number of times, its value being limited by the rarity of cases in which there is time to secure its full inhalation. In some of his examples the chance of using it has been occasional only, not all of the attacks affording the time needed to secure its value. Dr. Mitchell stated that he had never seen nitrite of amyl fail in epilepsy where there was time to use it. Last week he checked with it a fit coming on in his office, and a few months ago had the chance of exhibiting to those present at his clinic its capacity to stop for hours the convulsions of tubercular meningitis in a child.

From what he has seen of this agent, it does not seem to possess, in most cases, any capacity to lessen the probability of a return of the fits; but of its power to arrest the actual convulsion there can be no doubt. He asked Dr. William Jenks to test the nitrite in puerperal convulsions. His favourable evidence as to this point still awaits confirmation by other observers.

Dr. Mitchell has not yet used it in forms of spasms from peripheral irritation in children, but it would be, he should think, a safe and a ready agent. Neither has it been as yet employed in the horrible convulsions of uræmia. Its influence over cases of hysterical angina is as well marked as in non-hysterical attacks of this disorder. He has twice employed it in forms of disease which are akin to angina, but lack a distinct name.

Dr. Mitchell speaks with rather more hesitation of the use of this agent as an aid to the diagnosis of certain forms of cerebral disorder.

Those who see much of neural diseases meet very often with cases of head-troubles in which there are attacks of vertigo, or disturbed equilibrium, or mere sense of fulness with or without mental disorder. Occasionally these troubles are plainly not epileptic. Sometimes they are either epileptic and distinctly so, or else are the far-away beginnings of that malady. Sometimes a therapeutic diagnosis is possible, and the mere fact of the bromides controlling them may, when taken with the symptoms, clearly settle their nature. But very often our

suspicions are in favour of their being purely vascular disturbances of congestive type, and then he thinks that the nitrite of amyl may prove serviceable in settling the question; since in such cases the inhalation will sometimes recreate briefly the train of symptoms, so that they are at once recognized by the patient. This, when it occurs, is fairly conclusive as to the attacks having been truly congestive in character. The negative has also its value. Personally he has obtained useful help from this means, but he looks upon the whole matter as one which it is well to present to the profession as worthy of study, without at present claiming for it any very great utility.

Dr. Mitchell finds that physicians are very timid as to this remedy, but, after much and long use of it, he has altogether lost the dread of it with which he began. He would suggest that in syncope and in hysterical convulsions it might well repay a trial, and that possibly in the cerebral symptoms arising from shock it may also prove of value, and should be essayed in the cold stage of ague.

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New Material for Fixed Dressings.—Dr. JOHN B. ROBERTS, in a report of a clinic at the Pennsylvania Hospital, states (*Philad. Med. Times.*, Feb. 13, 1875) that after experimenting with various kinds of fixed dressings, Dr. R. J. LEVIS "seems to have arrived at one which fulfils all requirements; being cleanly in its application, drying with sufficient rapidity, removable without difficulty, exceedingly light, and withal very cheap. The fixed material is ordinary glue, with which oxide of zinc has been incorporated, either by the manufacturer or by the surgeon at the time of using it, in order to cause it to harden rapidly.

"Several pieces of flannel—old blankets or worn-out underclothing answering the purpose admirably—are selected and cut the requisite size. One of these is laid around the limb, and the two edges are tightly stitched together along the anterior surface, allowing the edge to project above the seam; then the melted glue, with oxide of zinc, is painted upon this with a brush. The dressing may be strengthened by an additional layer of flannel or blanket saturated with the glue and oxide of zinc, and made to adhere to the underlying layer. A third or even a fourth layer may be thus applied, if it is deemed necessary, and the limb supported until the dressing dries, which requires from four to eight hours.

"The stitches of the seam on the front of the limb having been cut with scissors, the edges of this elastic case are sprung apart, and the dressing removed. The edges are then trimmed smooth, and a number of eyelets inserted, in order that the case may be laced like a shoe, and the degree of pressure regulated.

"This fixed fracture-apparatus is exceedingly light, is made from materials almost everywhere obtainable, and is much cheaper than the silicate dressing. There are at all times pieces of waste flannel or cloth about a large hospital which can be appropriated, while the glue and zinc could probably be supplied at a very low price per pound—a quantity sufficient for the manufacture of many such splints. Another advantage is its elasticity, which permits its removal without endangering the splint, for it can be pulled apart, and immediately springs into place around the limb to which it has been moulded.

"By a little care and dexterity in stitching on the layers of flannel, the surgeon can readily shape the dressing so that both the leg and the foot are completely encased."

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Remedial Uses of Water.—The extremely valuable researches of Dr. James Currie on this subject, entitled *Medical Reports on the Effects of Water, Cold and Warm, as a Remedy in Fever and Febrile Diseases, whether applied to the Surface of the Body or used Internally*, have been latterly too generally overlooked, and Dr. AUSTIN FLINT has done a good work in calling (*American Practitioner*, January, 1875) attention to them. The edition of his Reports now before us bears the imprint of London, 1805, and is in two volumes. It is the fourth edition of Volume I. and the second edition of Volume II. The dedication to the first edition of Volume I. is dated Liverpool, 31st October, 1797. The fact that the first volume reached a fourth edition shows that the

work must have been popular in its day, and we have repeatedly referred to it as containing much that is put forth in latter days as new.

Dr. F. gives a very excellent and appreciative analysis of Dr. Currie's volumes, compares the views of the author with those of the advocates of this therapeutic measure in modern times, and finally presents the results of his own experience.

He states that he has had considerable experience in this mode of refrigeration at Bellevue Hospital, and he says it has proved more successful than any other treatment.

The internal use of water, as a remedial measure, irrespective of the action of cold, is worthy, Dr. F. thinks, of more attention than it has received. "A source of more or less benefit, derived often from the so-called mineral springs and artificial waters, seems to me to have been overlooked; namely, the usefulness of simple water ingested in considerable or large quantity. Undoubtedly much of the benefit which is received by those who drink mineral waters at the watering places is attributable to the change of scene, relaxation, the expectation of improved health, freedom from business and other cares, together with sanitary advantages pertaining to climate, regimen, and diet. But aside from these it is fair to attribute something, and perhaps not a little, to the drinking of the waters. It is evidence of this that mineral waters brought from the springs and those artificially prepared are often beneficial to those who remain at home. That the benfit may be due, measurably or chiefly, to the water and not to the medicinal constituents is shown by the fact that some waters supposed to possess extraordinary remedial potency have no medicinal constituents. The Missisquoi water, a few years since was famous for the cure of cancerous and other affections, was analayzed by Squibb, and found to be only remarkably pure water. In not a few of the waters which have acquired a popular repute the saline ingredients are either without effect or their effect must be insignificant; pure water substituted would do quite as well, if not better. If this be so, it is well to consider if medical practice might not with advantage avail itself more than is now done of the remedial agency of the internal use of water. And in connection with this topic the importance of the purity of water suggests itself, to which I allude merely to raise the inquiry whether the introduction of distilled water for drinking and culinary purposes might not be a wiser measure in both a sanitary and a therapeutical point of view. In this essay I can do no more than to raise the inquiry." In cases of renal disease Dr. F. adds his testimony to the efficacy of water used internally as sometimes proving a potential remedy.

Injections of Tincture of Iodine into the Cavity of the Uterus in Hemorrhage after Delivery.—The *Am. Journ. of Obstetrics*, Feb. 1875) contains an interesting article on this subject by Dr. James D. Trask. After referring to the diversity of sentiment entertained as to the safety of injections of the solution of the perchloride of iron in *post-partum* hemorrhages, he ascribes to Dr. Dupierris, of Havana, the credit of first employing injections of tincture of iodine for that purpose (see *N. A. Medico-Chirurg. Review*, vol. i., Philad., 1857). The mode in which all the remedies act which are ordinarily employed for checking uterine hemorrhage, Dr. Trask considers to be essentially the same, viz., by stimulating the muscles of the womb to contraction, causing compression of the bloodvessels and cessation of the flow. The styptic preparations of iron he considers to act mainly in this manner, as does also the tincture of iodine; he regards the latter, however, as the safer application. "In comparison," he says, "with *iron*, tincture of iodine has the advantage, so far as we now know, of being perfectly safe; at any rate, free from the evils incident to the employment of iron. Besides this we have the direct antiseptic influence of the iodine upon the uterine and vaginal mucous membrane. The application of iodine to the lining membrane of the uterus is, probably, of all things the surest means of counteracting a tendency to absorption of septic matter into the system after delivery. Since adopting the practice of injecting tr. iodine after operations upon the interior of the uterus, Dr. Emmet has not encountered a single case of septicæmia. As contrasted with the salts of iron in this

respect, it would seem as if there could be no room for hesitation in the choice. From the local action of iodine not only is nothing to be feared, but even advantage to be anticipated, while from the local action of iron much may be apprehended. As an excito-motor agent, iodine is probably at least equally good, while incapable of causing the formation of thrombi in the uterine vessels. In view of these facts one would feel justified in resorting to the iodine earlier than to the iron, and in this respect also an advantage may be gained for the patient, since the use of iron is expressly limited to cases deemed hopeless under ordinary management."

The following is a brief summary of what Dr. Trask seeks to show in this paper:—

"1. That a very considerable proportion of cases in which the injection of salts of iron has apparently saved life, have been those in which it accomplished this end not in virtue of its local styptic action, but because of its power to excite reflex action when cold, friction, pressure, etc., have failed.

"2. That when it produces coagulation of blood in the orifices of the blood-vessels there is danger that the coagulation may follow the vessels into the substance of the uterus, producing dangerous thrombi, and that the blood already collected in the cavity of the uterus also may become converted into a hard, intractable coagulum which the uterus cannot expel, and which may, after a few days, decompose and give rise to septicæmia.

"3. That there is evidence for believing that as an excitor of dormant reflex action, tinct. iodine may be substituted for the iron with positive advantage, from its efficiency as an excitor and from its antiseptic properties.

"If these points are established, the use of iron salts in a solution sufficiently strong to induce coagulation of blood in the uterine vessels should, at any rate, not be resorted to until tinct. iodine has been tried and failed.

"In conclusion, I would distinctly disavow the position of claiming positively for iodine a superiority over the iron. More facts are needed to warrant this. I have simply sought to present the considerations that render it extremely probable that the one will be found an advantageous substitute for the other, when it shall have received at the hands of the profession a sufficient trial."

Motor Centres in the Cerebral Convolutions.—The *New York Medical Journal* for March, contains the report of a committee of the New York Society of Neurology and Electrology, consisting of Drs. J. C. Dalton, J. W. S. Arnold, Geo. M. Beard, A. Flint, Jr., and John M. Mason, on the above subject.

The observations of the Committee confirm the most important of the results obtained by Hitzig and those who have followed him in this line of experiment.

"There is no doubt," the Committee say, "that there are certain limited spots upon the surface of the cerebral convolutions which, when subjected, in the etherized animal, to a weak galvanic current, will cause distinct momentary contraction of separate muscles, or groups of muscles, on the opposite side of the body.

"The same galvanic stimulus, applied to other points, not more than five millimetres distant, will be entirely without effect; and, when reapplied to the former spot, will again produce the same contractions as before.

"The number of the repetitions of particular contractions following galvanization of particular points leaves no question as to the reality of the connection between them.

"In repeated instances, corresponding points upon the right and left sides of the brain act experimentally as centres of motion for similar groups of muscles on the left and right sides of the body. We cannot say that in all cases this bilateral correspondence of the cerebral centres of motion is complete; although it may be so in reality, since the two sides of the brain in the dog are never exactly symmetrical, as regards either the fissures or the convolutions.

"The action of the cerebral convolutions in producing muscular contraction, when this contraction is definite and limited, is always a crossed action; galvanization of the convolutions on either side of the brain exciting movement in the muscles, both of the limbs and face, on the opposite side of the body.

"Galvanization of the dura mater, or other sensitive parts, produces, on the contrary, by reflex action, muscular twitchings on the same side of the body.

"This is especially illustrated in Experiment No. III., where, the dura mater being exposed but unopened, application of the electrodes to its exterior surface produced, twenty-four times, muscular twitchings on the corresponding sides only; namely ten times on the left, and fourteen times on the right.

"But, after the dura mater had been removed, application of the electrodes to the surface of the convolutions, in the same experiment, produced, thirty-two times, distinct muscular contraction on the opposite side of the body alone; while once only it was followed by a slight contraction on the same side.

"In the same experiment, application of the electrodes to a small part of the dura mater left at a corner of the wound produced a distinct depression of the shoulder on the same side, while their application to the cerebral surface immediately adjacent was without effect; this result being obtained invariably in twenty applications, made alternately to the dura mater and to the brain.

"If we compare the total results of all the experiments, the preponderance of crossed action in galvanization of the brain becomes very manifest. Fifteen different points of the cerebral surface, when galvanized, excited distinct movement on the opposite side of the body one hundred and sixty-nine times; two points excited slight movements on the same side with themselves four times only.

"Among these instances is not counted that of a special point which usually excited a flexion of the head and neck in the median line; both sets of the muscles, right and left, being either called into action harmoniously, or else each one having the power to flex the head without deviating it toward the opposite side.

"All the centres of motion for the anterior and posterior limbs are situated in the convolution immediately surrounding the frontal fissure. This fissure, which is well marked in the dog and other carnivorous animals, is a nearly transverse furrow running outward from the great longitudinal fissure, and situated at about the junction of the middle and anterior thirds of the brain, as viewed from above. The centres for flexion and extension of the anterior and posterior limbs the Committee have always found in the external part of the præ-frontal convolution, just anterior to this fissure, and in the post-frontal convolution just behind it. In a majority of cases those for the anterior limbs were situated more in front, near the outer extremity of the frontal fissure, and those for the posterior limbs more posteriorly and inward, but their exact position varied somewhat in different cases. The centre for flexion of the head and neck in the median line is in the lateral and anterior part of the præ-frontal convolution, where it bends downward and outward; that for flexion of the head with rotation toward the side of the stimulus is in a part of the convolution situated still further toward the front and downward, so as to be invisible in a view of the brain taken from above. The centre for the facial muscles is in a region situated on the lateral part of the hemisphere, immediately about the supra-Sylvian fissure.

"These localities, as found by the Committee, correspond in nearly all essential particulars with those given by Hitzig, and in some instances their identity was complete. This fact is of much value as testifying to the genuineness of the results in both cases—since the spots experimentally found to be centres of motion were all marked, as above stated, by the insertion of needles before killing the animal; but their location upon the hemispheres, and consequently their correspondence with those discovered by Hitzig, could never be seen until after the brain had been removed from the cranium.

"With regard to the separate points for flexion and extension of the anterior and posterior limbs respectively, the Committee are unable to fix these points more precisely from the results of their experiments. In some cases they varied in position more or less in different animals; and in some a single application of the electrodes would produce movement in more than one set of muscles. It is not possible, therefore, for the Committee to indicate an exact or invariable locality for the centres of motion, by reference to the fissures or convolutions; but they are led to the conclusion that these centres exist, and

that, when the galvanization happens to be applied only to the spot which they occupy, they will produce movements peculiar to themselves.

"Thus, in the experiments detailed above, sixty-four applications of the electrodes produced flexion in one limb only, and fourteen applications produced extension in one limb only; making seventy-eight isolated movements. In twelve cases there was flexion or extension of both limbs simultaneously, and in eleven cases flexion of one limb, accompanied by extension of the other; making in all twenty-three double movements of the limbs. That is, more than three-quarters of all these movements were isolated movements of flexion or extension of a single limb.

"It is evident that a variety of circumstances influence the results of galvanizing the cerebral convolutions. On several occasions the contractions produced in an opposite limb seemed to increase in intensity with the repetition of the stimulus at short intervals. A deeply etherized condition of the animal, on the other hand, will sometimes suspend altogether the phenomena of movement, which were well marked a short time before; and these phenomena may reappear after an interval of repose.

"A weak galvanic current from eight cells, applied to a particular spot, may cause distinct movement in one of the opposite limbs only; while a stronger current from sixteen cells, applied to the same spot, may produce a confused motion in all the limbs at once."

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Utero-Gastrotomy.—Dr. J. MARION SIMS, of New York, made some very interesting remarks on this subject at the recent meeting of the New York State Medical Society (*Medical Record*, Feb. 15, 1875). He said, that, having had the honour of reading a paper at the last annual meeting on the removal of intra-uterine fibroids by enucleation, he now proposed to speak of the removal of larger uterine fibroids by abdominal section, whether intra-uterine, interstitial, or extra-uterine in character. This operation is now on its trial. It stands where ovariotomy did twenty years ago. It has the same opposition to encounter, and will doubtless achieve the same victory. In this country it has been performed successfully by Kimball, Burnham, Boyd, Storer, Darby; in England by Charles Clay, Fletcher, and very recently by Lawson Tait. Koëberle, of Strasbourg, has cured four out of six cases, while Péan, of Paris, gives us the minute histories of eleven cases, with seven cures, and since the publication of his work, his pupil Urdi has published a work in which he says, that the whole number of Péan's operations up to the present time is twenty, with fifteen cures.

Dr. Sims has recently operated twice for the removal of the uterus, with large fibroid, by abdominal section. The first case was in a feeble state from excessive loss of blood. During the separation of a large fold of intestine from the surface of the tumour, the capsule of the tumour was torn up, large venous sinuses were opened, and the patient suddenly lost about sixteen ounces of blood. She never rallied, and died from the shock and loss of blood in thirty-five or forty minutes after the operation.

The second case had lost large quantities of blood and was quite anæmic, but was thought to be a favourable case for operation. It was done on the 19th of November, according to Péan's method. The patient died in seventy-six hours, of septicæmia. Examination, post-mortem, showed the pedicle in a sloughing condition below the wire clamp; the slough extending along the line of incision in the abdominal parietes, and on the top of the bladder, and in the broad ligaments. There were eighteen ounces of bloody serum in the peritoneal cavity. Péan's method of operating is to make a pedicle of the supra-vaginal portion of the cervix, and to draw this out through the lower edge of the abdominal section by clamp, as in ovariotomy. He transfixes the cervix by a double wire, ties one on each side of the cervix, inclosing the broad ligament on its respective side in the wire. Dr. Sims employed Péan's method in both his cases, but would not use it again; but he advocates the use of the actual cautery. He exhibited a clamp écraseur on the principle of Nott's [and Isaac E. Taylor's], by which he would compress the broad ligament on one side near the body of the uterus, and then sever the ligament with the cautery down to

its junction with the cervix. The same method is to be followed on the side, and then it only remains to cut the tumour from the supra-vaginal cervix and cauterize the surface. The several cauterized portions are then dropped into the peritoneal cavity, when, in spite of the eschar, they unite at once by adhesive inflammation to the surfaces with which they lie in contact.

Dr. Sims then exhibited an automatic alcohol blowpipe for heating the cautery irons.

Dr. E. M. Moore, of Rochester, said his views with regard to operations which required the opening of the abdominal cavity had, for several years, been undergoing considerable change, and there seems to be some truth in the idea that it may be as safe or safer to perform gastrotomy for uterine than for ovarian tumours, owing to the adhesions which are so likely to exist in the latter case.

While it is no trifling matter, or an operation to be done without good and urgent occasion, surgeons have to a great extent got over the fear of opening this cavity. A large number of the unfavourable results are undoubtedly from septicæmia. Since Kimball, of Lowell, performed the first operation of this character, this procedure has probably been resorted to more often than the profession were aware. In the case of Dr. Kimball the patient recovered. Last summer Dr. Moore said he had a case of uterine fibroid on which he operated successfully, in which the tumour weighed seventeen pounds. The operation was a modification of the one introduced by Prof. Miner, of Buffalo, in cases of ovariotomy, and called by him ovariotomy by enucleation.[1] In this case a pedicle was created by separating a portion of the serous membrane from the surface of the uterus and tumour and bringing it into the abdominal wound, where it was retained, as in ovariotomy, and formed a cup which received the blood which might escape, and the discharges, and thus prevented their entrance into the abdominal cavity.

Professor E. R. Peaslee, of New York, called attention to some points in Dr. Sims' remarks. His own experience with this operation commenced one week after Dr. Kimball made his operation. The success or failure of the operation would depend upon a variety of causes, and was at best, even in the opinion of Dr. Sims, a dangerous one. Péan does not operate indiscriminately, but he has operated in a case of fibrocystic tumour even when the woman was nearly exhausted, and in some cases of fibroma with ascites, even when the patient was nearly moribund. Dr. Peaslee had seen but two cases in which he thought the operation was advisable, but did not wish to be understood as opposing it. He was perfectly willing to undertake it when the indications were fulfilled.

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Case of Traumatic Epilepsy greatly benefited from Operation.—Mr. Cline, it is well known, cured two cases of epilepsy resulting from injury to the head, by the use of the trephine; and the late Professor Dudley, of Lexington, Ky., reported (*Transylvania Journ. Med.*, vol. i., 1828; see also *Am. Journ. Med. Sci.*, vol. ii. p. 489, 1828) three cases of epilepsy arising from the same cause successfully treated by the same operation. More recently Dr. John T. Darby communicated to the New York Neurological Society (*Psychological and Medico-Legal Journal*, Feb. 1875) another case greatly benefited by the same treatment. In this instance the manifestation of epileptiform convulsions occurred *ten years* after the injury (a kick on the head by a mule), and the operation for relief was performed in the *thirteenth year* succeeding the accident. Several similar cases were related by members during the discussion of Dr. Darby's paper.

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Salicylic Acid.—Dr. Edward R. Squibb read before the Medical Society of New York (Feb. 2, 1875) a highly interesting note on this article, in which he gives an outline of its history, and offers some thoughts in regard to its sphere

[1] See American Journal of the Medical Sciences, October, 1872, p. 391, and Buffalo Medical and Surgical Journal of June, 1869.

in medicine. This latter will most interest our readers, and we extract the following observations relating to its practical application.

"It is used for medical and surgical purposes either dry or in solution. When used dry it is sprinkled on to wounds, ulcers, or dressings in the form of very fine powder, in very small quantities, either simply powdered, or mixed in various proportions with some diluent such as starch. When used in simple solutions either for spraying surfaces, or for washes or gargles, it is used in tepid solution of about one part to three hundred parts of water. Where stronger solutions are required for washes, gargles, or to moisten dressings, one part of the acid and three parts of phosphate of sodium to fifty parts of water have been used. When applied to wounds it appears immediately in the urine.[1]

"Its alleged advantages over all other antiseptics are: First, that it is far more powerful and effective in smaller quantities; and secondly, that it is, in all quantities necessary for complete effectiveness, entirely devoid of irritant action upon the living tissues. It is not caustic nor corrosive in any quantity, and never produces inflammation. In large quantities it may be irritant and painful, but yet rarely surpasses a stimulant effect, while it appears to be quite neutral in the very small quantities which are yet thoroughly effective. Thirdly, it is said to reach and prevent processes of decomposition which are beyond the reach of all other antiseptics or antiferments. These processes are of two kinds, namely—vital, or those in which living organisms have an important part, such as that produced by yeast and many of those which occur in putrefaction; and chemical, or those which occur independent of vitality, as the production of the volatile oils in mustard and bitter almonds, the effect of diastase, etc. Now, while carbolic acid and other antiferments are azymotic, or completely arrest or prevent fermentations of the first kind, they are powerless with the chemical processes. Salicylic acid is said to be more effective with the vital ferments, and equally effective with the chemical.

"Fourthly, in quantities said to be thoroughly effective, it is entirely odourless, and tasteless, and harmless, whilst it has no poisonous effect in any reasonable quantity.

"It prevents or arrests the souring of worts, washes, and beers of the brewers; and prevents or arrests the putrefactive agencies which are so troublesome and destructive to the glue manufacturers; and these and similar trades have thus far seemed to be its principal consumers. Separate portions of fresh milk set aside to become sour, one to which 0.04 per cent. of salicylic acid was added soured thirty-six hours later than the other. Urine thus protected was on the third day still clear, and free from ammoniacal odour.

"Varying proportions of the acid added to accurately measured separate portions of sweet milk, and these carefully observed afterwards until they sour —or, by the use of meat juice instead of milk, observed closely for signs of putrefaction—would offer good indications of the quantities required to arrest these varieties of fermentation.

"Professor Thiersch, of Leipsic,[2] used it upon contused and incised wounds, and in operations, with excellent general results, destroying the fetid odour of cancerous surfaces, and pyæmic ulcerations. To such uses this writer would add the suggestion that for washing out the cavities of the abdomen and chest after those operations which tend so strongly to septicæmia, solutions of salicylic acid would seem to offer very great advantages should it prove to be as bland and unirritating as it is stated to be, and yet so effective.

"Most of these statements are summed up from the periodical literature of continental Europe during the past six months, little having appeared upon the subject in Great Britain, or in this country, and nothing having been done with it so far as known in either country.

"In occasional paragraphs and allusions benzoic acid has been coupled with salicylic acid as being only second to it in effectiveness as an antiferment, and with similar advantages.

"These statements are collated and condensed here as being well worth

[1] Thiersch, Pharm. Centralhalle, Oct. 22, Nov. 5.
[2] Pharm. Centralhalle, Nos. 44 and 45, 1874.

attention in themselves, and in their relations to the phenomena of septic poisoning as already known. But they have a new significance, or at least suggest to this writer a new train of thought when viewed in connection with some researches now in progress and but just appearing in the periodical literature.

"Experiments[1] were made upon animals by the injection of measured quantities of septic blood. The blood of a healthy animal was allowed to become putrid. Increasing doses of this were injected into healthy animals until the amount necessary to cause death was ascertained. This quantity proved to be large, the animals recovering from all the small doses. Blood from the animal whose death was caused by injections of putrid blood was injected by increasing doses into healthy animals until the fatal dose was reached, and this dose was found to be smaller than that which killed the first animal. The blood of the second dead animal was used on healthy subjects in the same way as that of the first, and proved fatal in still smaller quantity. The experiments were continued upon the same plan until finally a point was reached when a very minute portion—the fraction of a drop perhaps—from the last animal proved fatal to the next, with more violent toxic symptoms and a shorter course. The important indications of this series of experiments is, of course, the rapid accumulation of potency in septic poisoning. And the question put by this indication is not only as to how this potency accumulates, but also how to prevent and arrest it. Metro-peritonitis, and common pyæmia would doubtless, unobstructed, accumulate potency in the same way without visible inoculation, and often do continue and accumulate even against the vigorous application of the best means of prevention yet known. No hypothesis can be constructed that will embrace the phenomena of septic poisoning as they are now rapidly being investigated without including zymotic diseases and the cachexiæ, and none will account for the phenomena already observed without bringing it within the sphere of what is called, in some of its degrees or phases, fermentation. Hence, if the medical art is to keep pace with the progress of the physical sciences, physicians cannot afford to pass by such articles as salicylic and benzoic acids when offered by chemistry, without investigating their effects upon disease, even though not one out of ten should repay the labour of investigation, for it is certainly in this direction of research that medicine must look with greatest hope of success to control those abnormal vital processes which so far may be modified, but not stopped. For example: Suppose a primary syphilitic or cancerous sore, or a diphtheritic patch, or even a cachectic pulmonary infarction, while these are merely the localized phonomena of an external inoculation, or of an internal taint—they must all be considered to partake of the nature of a fermentation, and by some such process invade the whole organism. Then suppose an antiferment, which when applied to any surface not covered by an impervious cuticle very soon appears unchanged, first in the blood and then in the secretions and excretions—the manifest logical antagonism of such substance to the diseased conditions becomes too important to be neglected, and the counsels of wisdom demand that its claims to such antagonism be disproved before it be dismissed. The question as to what may become of the cancer-cell, or of the less tangible precedent cause of it, or of the bacteria, or the precedent conditions which increase their fertility, under the well-directed influence of this class of agents, is, perhaps, the most important one in all medical science. And just in proportion as accurate research develops agents of greater and greater power, will be the prospect of better success in treatment.

"The phenols, especially the so-called carbolic and cresylic acids (phenol and cresol), were, and must always remain to be, most important additions to this class of agents, surpassing in power all that had been previously tried. And if now salicylic acid shall prove more potent than the phenols, the further gain will be very great, and the researches upon it will again lead up toward future discoveries of still greater power."

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[1] Bergman, Panum, Davaine, Vulpian, and Bouley—the latter researches in Bulletin de l'Acad. de Méd., 1872, 1873, and Davaine, translated by Mary C. Putnam, M.D., in Archives of Scientific and Practical Medicine, by C. E. Brown-Séquard and E. C. Seguin, No. 5, p. 469.

Experiments on the Laryngeal Nerves and Muscles of Respiration, etc., on a Criminal Executed by Hanging.—Dr. W. W. KEEN read to the College of Physicians, of Philadelphia (Feb. 3, 1875), an account of these experiments.

Dr. George Johnson had expressed the belief that while pressure on one recurrent nerve will cause direct unilateral palsy of the larnyx, but not bilateral spasm or palsy, pressure on the vagus involving its afferent fibres may cause both. The reason of this he supposes to be that the nerve-nuclei of both sides are so connected that each possesses bilateral activity. Dr. Mitchell having suggested the probability of a chiasm of the minuter fibres of the recurrents in man, which, though not demonstrated anatomically, might be proved physiologically, the following experiments were undertaken upon a criminal recently executed by hanging. After hanging about half an hour, the body of the criminal was cut down, and immediately examined. The left vagus and recurrent laryngeal were dissected as low down as possible in the neck, and the vocal cords examined while the nerves were excited by electricity. Repeated faradization with weak and strong currents, and galvanization with from four cells up to forty, of the recurrent and also of the vagus, produced decided movements of the left cord only, and none of the right. The wires were applied directly to each nerve, and the irritating action of a tumour simulated as nearly as possible. Careful dissection showed that in all probability none of the fibres of the vagus were injured. The definite conclusion to be drawn from the experiment is that no chiasm of the inferior laryngeal nerves exists. No reflex motion was observed in the larynx, although the absence of this may have been due to violence done the parts by hanging.

Experiments upon the muscles of respiration were then undertaken. The left phrenic, having been insulated, was excited as in the previous experiments, but without result; no movements whatever of the chest were produced, nor was greater success obtained by one wire applied to the nerve while the border of the diaphragm was followed with a sponge, nor when both sponges were applied to the diaphragm.

The intercostals were then examined. Having been exposed from the median line to the line of the axilla, the interrupted current was applied to the intercartilaginous portion of the internal intercostals by means of small sponges, when it was found that they all raised the cartilage below them. The external intercostals were then faradized, when the upper rib was pulled down very markedly, while the lower one was just perceptibly raised; the movement increased from the first to the seventh, the last four not being examined. These experiments seemed to point to the conclusion that the internal intercostals are inspirators, and the external expirators.

The muscles of the face still retained their electro-muscular contractility; but one was examined carefully, the pyramidalis nasi, which appeared as a result of the electrical excitation to act as the direct antagonistic of the central portion of the occipito-frontal Dr. Keen pointed out, in conclusion, the important results which this new method of investigation—*the faradization of the muscles on the recently dead*—promises to yield.—*Phila. Med. Times*, March 20, 1875.

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Exstrophy of the Bladder.—An operation for this malformation was recently performed by Dr. CHEEVER, at the Boston City Hospital. The patient was a boy, six months old, well developed, and healthy. The opening through the abdominal walls is an inch above the pubes on the median line, and is about half an inch in diameter. When the child cries or strains, there protrudes from this aperture a bright red, velvety tumour, nearly an inch in diameter. A catheter passed into the bladder through the urethra finds an exit through the abdominal opening, and about half of the urine also comes out of the same opening. There is no umbilicus, nor scar indicating the remains of one. The penis is normal, the urethra terminates normally, without hypospadias, and both testicles are in the scrotum. The folds of skin in the groin usually seen in these cases are full and large. There is no hernia, nor any other deformity, except the one above described. Dr. Cheever dissected up the skin from the entire circumference of the orifice, and joined the freshened edges with six silver sutures on the median line. The opening was thus effectually closed.—*Boston Med. and Surg. Journ.*, Feb. 11, 1875.

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